A MIXED-METHODS ANALYSIS OF THE EFFECTS OF FACEBOOK-BASED SOCIAL SUPPORT ON HEALTH ACROSS AUSTRALIAN METROPOLITAN AND REGIONAL COMMUNITIES: DOES SOCIAL MEDIA GO THE DISTANCE?

A Thesis submitted by

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Abstract

Facebook is a feature in contemporary life and can provide feelings of social support, which buffer the relationship between life stress and physical and mental health outcomes. It has been hypothesised that geographically-diverse communities may use Facebook to compensate for limited opportunities to access face-to-face social support. This thesis examines the role of Facebook-based social support on physical and mental health concerns for both regional and metropolitan Australians through a sequential mixed methods approach, and is presented as a thesis by publication. Four papers were submitted to peer-reviewed journals based on the research conducted for this thesis. These included a systematic review of the Facebook-based social support literature, two quantitative papers examining the effects of Facebook-social support on health across two samples of metropolitan and regional Australians, and a qualitative paper exploring the thoughts and feelings of regional Australians towards Facebook. The systematic literature review focused on 27 studies which examined the effects of Facebook-based social support on mental and physical health outcomes. The results of the systematic literature review found that Facebook-based social support improved general physical and mental health, as well as well-being. It was also found to reduce symptomology associated with mental illness, including depression, anxiety, online victimisation, and loneliness. The quantitative papers aimed to evaluate Facebook-based social in the context of the two main models of social support (the buffering hypothesis and the direct effect hypothesis). These papers drew on a sample of regional (n = 162) and metropolitan (n = 212) Facebook users. The results of the quantitative papers showed that greater levels of Facebook-based social support predicted lower levels of health concerns and mental distress in the metropolitan-based sample. No association between Facebook-based social support and health concerns was found in the regional sample. The qualitative paper focused on exploring the thoughts and feelings of fifteen regionally-based Australian

Facebook users on Facebook and its use in their communities. The themes identified in the qualitative paper showed that regional Australians strongly engaged with Facebook as a communication utility and a local message board. The interviewees reported that Facebook was important to maintain social connections, however face-to-face social interactions were more meaningful. These findings show that the use of Facebook as a mechanism for social support, and its effects on health, vary across geographical locations, and appears to be mainly found in a metropolitan population. This research also shows that, while metropolitan users draw on Facebook-based social networks for social support, regionally-based users engage with Facebook as a communication utility rather than a social networking site. This difference might explain the difference in effects of Facebook-based social support on health outcomes across the two populations. This research highlights the need for further research into social media engagement across geographically diverse populations to establish methods of health-improving engagement with Facebook.

Keywords: Facebook, social support, regional health, mental health.

Certification of Thesis

This Thesis is the work of John Gilmour except where otherwise acknowledged, with the majority of the authorship of the papers presented as a Thesis by Publication undertaken by the Student. The work is original and has not previously been submitted for any other award, except where acknowledged.

Principal Supervisor: Associate Professor Charlotte Brownlow

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Statement of Contribution

The following detail is the agreed share of contribution for candidate and co-authors in the presented publications in this thesis.

Chapter 3

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John Gilmour: 70%

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The overall contribution of John Gilmour was 70% to the concept development, article selection, analysis, drafting and revising the final submission; Associate Professor Charlotte Brownlow Dr Tanya Machin, and Dr Carla Jeffries each contributed 10% to article screening, editing and providing important technical inputs.

Chapter 4

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Chapter 6

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Gilmour, J., Jeffries, C ., Machin, T., & Brownlow, C. (Prepared for submission). The Buffering Effects of Facebook-based Social Support on Health Across Metropolitan and Regional Australians.

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASGS	Australian Statistical Geography Standard
CMC	Computer-mediated Communication
SNS	Social Networking Site

Chapter 1 – Introduction

In the 2016 Australian Institute of Health and Welfare (AIHW) report it was found that the mental and physical health of Australians who live outside major metropolitan areas (i.e., in regional areas) was significantly worse than those who lived in major Australian cities (AIHW, 2016; Bourke et al., 2012; Kelly et al., 2010). Physical health outcomes that have been found to be worse for Australians living regionally include: increased alcohol and drug abuse, decreased positive health activities, and an increased likelihood of suicide, for which the rate is currently 1.7 times higher in non-metropolitan areas than the national average (AIHW, 2016, 2019a). Additionally, Australians living regionally are more likely to have mental health concerns, such as depression and anxiety, than metropolitan-based Australians (AIHW, 2016, 2019b). The lack of access to facilities, the increased stress of poor economic opportunities, stigma around mental health, and social isolation are all major factors in poorer mental health outcomes for regional Australians (Alston, 2012; Bourke et al., 2012; Fraser et al., 2002; Wrigley et al., 2005).

A major predictor in better mental and physical health outcomes is social support (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013). Social support is the extent to which a person perceives, and is actually, a part of a social network that supports, cares for, and provides assistance to an individual (Cobb, 1976; Cohen & Wills, 1985; Li et al., 2015). Social support is considered to be crucial for human health and well-being (Cobb, 1976; Cohen & Wills, 1985; Li et al., 2015; Taylor, 2011). Social support has been found to buffer a person from the negative physical and psychological effects of stress, as well as provide greater feelings of well-being and life satisfaction (Cohen & Wills, 1985; Taylor, 2011; Zhang, 2017). High levels of social support has been found to predict lower levels of depression, anxiety, perceived stress, physical illness, and mental distress (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013; Nabi et al., 2013). Social support has

also been found to predict higher levels of life satisfaction, well-being, general physical health, and health-seeking behaviours (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013; Nabi et al., 2013).

Social support has also been found to buffer an individual from the negative effects of stress on health (Cohen & Wills, 1985; Li et al., 2015). This is known as the buffering hypothesis, and states that social support mediates the relationship between increased stress and negative health outcomes (Cohen & Wills, 1985; Li et al., 2015). Additionally, social support has been shown to have a positive effect on health outcomes, regardless of stress (Cohen & Wills, 1985; Lakey & Orehek, 2011). This is known as the direct effect hypothesis (Cohen & Wills, 1985; Lakey & Orehek, 2011).

Previous research has shown that, while both models of social support can be present together, the buffering and direct effect hypotheses can have distinct effects on health and well-being (Che et al., 2018; Turner & Brown, 2010). The main effect of increased social support can improve an individual's well-being and lower levels of depression, regardless of levels of stress (Heshizer & Knapp, 2016; Turner & Brown, 2010). The buffering effect of social support occurs when individuals are experiencing high levels of stress or pain, and is most effective at reducing the effects of this increased stress or pain (Che et al., 2018; Lee et al., 2006). Traditionally, social support has been thought to be derived from face-to-face interactions, however, more modern methods of social interactions, like social media, have been found to increase perception of social support and improve health outcomes (Frison & Eggermont, 2015; Nabi et al., 2013; Oh et al., 2013).

Social media has become a staple of modern life, with nearly 3 billion people worldwide regularly using social media sites in 2020 (Facebook, 2020; Statistica, 2020). The largest of these social networking sites (SNSs) is Facebook, which currently has more than 2.60 billion active monthly users (Facebook, 2020; Statistica, 2020). Facebook is also the

most popular SNS in Australia, with 65% of the population having an active Facebook account (Crowling, 2016; Sensis, 2017; Statistica, 2020).

Facebook provides users with a wide range of options for computer-mediated communication (CMC) such that Facebook users can post pictures, videos, or text-based updates about their thoughts, feelings, and life events (Nadkarni & Hofmann, 2012). Users can directly message other Facebook users privately or in groups (Nadkarni & Hofmann, 2012; Oh et al., 2013). Additionally, Facebook allows for non-textual emotions to be conveyed, including 'likes', emoticons, and gifs. Facebook also provides mechanisms for event planning, following of pages related to news, interests, and businesses, and allows users to video chat (Nadkarni & Hofmann, 2012; Oh et al., 2013). Additionally, while there are other SNSs, like Twitter or Instagram, Facebook is designed to be a dedicated site where individuals can socialise directly. Twitter, on the other hand, is designed to share thoughts and information (Hargittai & Litt, 2011), and Instagram is designed to share experiences (Lee et al., 2015). With the rapid rise of dedicated SNSs such as Facebook that allow for CMC-based social interactions, it is likely that there is a new digital realm from which social support can be drawn.

Using Facebook as a mechanism for social support has been associated with better mental and physical health (Kim & Lee, 2011; Nabi et al., 2013). Studies have found that higher levels of Facebook-based social support (i.e., social support drawn from Facebook interactions) can predict lower levels of perceived stress, physical illness, and mental distress, as well as increase the likelihood of a person seeking out health services (Frison & Eggermont, 2015; Kim & Lee, 2011; Nabi et al., 2013; Wright et al., 2013). Facebook-based social support has been found to assist individuals with limited social opportunities or little inclination to seek support in a face-to-face context (Indian & Grieve, 2014; Miller, 2008). While Facebook-based social support has been found to have a strong effect health and well-

being in individuals with lower levels of face-to-face social support, it has been noted that even individuals with high levels of face-to-face social support can benefit from engaging with Facebook social networks (Frison & Eggermont, 2015; Indian & Grieve, 2014). It is also worth noting that young adults and adolescents appear to utilise Facebook as means of social support, when compared to older adults (Chan, 2018).

One of the barriers to accessing face-to-face social support in regional areas is the geographic distance between individuals and populations centres, such as towns or hamlets (Koopman et al., 2001; Lauckner & Hutchinson, 2016; Vyavaharkar et al., 2010). The difficulties created by the distance between individuals and population centres could mean that Australians who reside in regional areas could benefit from social support opportunities that Facebook can provide. Another barrier to social support in regional communities is the smaller populations of towns (Berry et al., 2006; Lyons et al., 2015). As regional populations, much like metropolitan populations, are not homogenous, this can present an issue for individuals to connect with people who share their goals and values, which can lead to lower levels of social support (Berry et al., 2006; Handley et al., 2012; Lyons et al., 2015).

However, within the available scientific literature, studies that examine Facebook-based social support are drawn from metropolitan or student samples. An absence of studies that draw from regional samples has been noted, and no studies comparing metropolitan and regional users have been conducted (Indian & Grieve, 2014). The proposed program of research will focus on the use of Facebook as a mechanism for social support to improve physical and mental health outcomes for persons in metropolitan and regional locations.

Aims and Research Questions

The overall aim of the proposed program of research is to examine the use of Facebook as a mechanism for social support in metropolitan and regional communities, and its role in

stress-buffering. In order to align with the evidence drawn from the Facebook-based social support literature, three sequential research questions were developed:

- Research question 1: ‘Does the academic literature indicate that social support drawn from Facebook translates into positive physical or mental health outcomes?’
- Research question 2: ‘Does social support drawn from Facebook improve health for both regional and metropolitan Australians?’
- Research question 3: ‘How do regional Australians describe their use of Facebook as a mechanism for accessing social support?’

To this end, the first question proposed will be focused at providing a systematic review of the Facebook-based social support literature and is focused on quantitative studies (given the focused nature of the research question). The second research question is has been focused on quantifying Facebook-based social support and its effects on health in Australian communities. The third research question is qualitative in nature, and is has been focused on exploring the thoughts and feelings of regional Australians towards Facebook and its utility in their community. Given the differing nature of these research questions, three distinct methodologies will be used to evaluate them: A systematic review of the literature, a cross-sectional study aimed at regional and metropolitan Australians who use Facebook, and qualitative interviews with regional Facebook users. This requires a mixed-methods approach, given the variant nature of the research questions (Cresswell et al., 2003).

As such, three studies are proposed. The first will provide a systematic review of current research literature to explore if Facebook-based social support is demonstrated as beneficial to mental and physical health outcomes in the existing literature. While the evidence appears to support this premise, no systematic review of the literature has been conducted to examine the effects of Facebook-based social support on health.

After systematically evaluating the relevant Facebook-based social support literature, the following two studies will utilise a sequential explanatory mixed-methods design. The reason for this choice in design reflects the established nature of this area of research, and thus this approach is considered ideal for explaining and interpreting a quantified result (Cresswell et al., 2003; Tashakkori & Teddlie, 2010). The sequential explanatory mixed-methods design utilises a quantitative study, followed by a study using qualitative methods (Cresswell et al., 2003; Tashakkori & Teddlie, 2010).

The second study will map the findings from Study One on to large samples of the target populations of metropolitan and regional Facebook users in order to establish a broader understanding of the effects of Facebook-based social support on health in these communities. Study Three will explore qualitatively how Facebook is used in regional communities and the role it can potentially play in improving feelings of social support. This will establish a deeper understanding as to the motivations that regionally-based individuals may have for using Facebook as a form of social support. This methodological approach is consistent with the methodologies put forward by Cresswell et al. (2003) for a sequential explanatory mixed-methods design.

Within a sequential explanatory mixed-methods design, the quantitative studies are used to quantify an effect or phenomena, and then utilise a qualitative methodology to contextualise the effect (Cresswell et al., 2003; Ivankova et al., 2006). As there has been previous research into the effects of Facebook-based socials support on health, which will be discussed in greater length in Chapter 2, this research will not be exploratory, but will attempt to explain these effects in a distinct population. As such, this thesis will systematically quantify the previous research, examine the cross-sectional effects of Facebook-based social support on health within Australian communities, and contextualise these findings with interviews.

In addition to the sequential explanatory mixed-methods methodology, this will be a thesis by publication, in which all of the chapters that are based on the three studies listed above will be published, peer-reviewed articles, or be under review at the time of submission. As such, at the beginning of those chapters, a brief overview of the study, as well as the implications for the larger thesis will be discussed. Additionally, information on the journal at which the study has been submitted/accepted will also be provided.

Study One: Systematic Literature Review

The first research question asks whether the current academic literature indicates that social support drawn from Facebook translates to positive physical or mental health outcomes. To answer this research question, the first study of the proposed program of research will provide a comprehensive and systematic review of the current state of the literature as it pertains to Facebook-based social support. This study will include the development of inclusion criteria, search terms, as well as the literature search, data extraction, and data synthesis.

Study Two: Quantitative Survey of Australian Facebook Users

The second research question asks if there is a difference between how metropolitan and regional Australians' draw social support from Facebook. This study will draw on the findings provided by the systematic review in Study One. This survey aims to investigate the moderating effect of Facebook-based social support between perceived stress and health outcomes for metropolitan and regional Australians, as well as how the structure of Facebook social networks can influence Facebook-based social support.

It is important to note that the results of Study Two are presented in two chapters in this thesis. The reason for this study being included as two chapters is that each chapter will examine the results of the survey within the context of the two main theories of social support. These theories, the buffering hypothesis and direct effect hypothesis (see Chapter 2),

propose distinct models of social support, and require testing individually (Cohen & Wills, 1985; Lakey & Orehek, 2011; Taylor, 2011). As such, Study Two was divided into two articles, reflecting different models and analyses.

Study Three: Qualitative Interviews of Regional Users

The third research question focuses on how regional Australians' describe their use of Facebook as a social support mechanism. This study aims to provide a qualitative explanation of the results from Study Two and will be semi-structured interviews with regional Facebook users, as recommended for sequential exploratory mixed-methods design by Cresswell et al. (2003). As previously noted, there is currently no study that explores how Facebook-based social support is utilised in regional communities. As such, it is prudent to explore how regional users of Facebook perceive the social support provided on this SNS. The interviews will focus on Facebook usage, methods of social support, the presence of loneliness or social isolation, structure of Facebook social network, stressors, general mental and physical health, as well as support-seeking behaviours.

Thesis Structure

The structure of this thesis will be as follows. This chapter, Chapter 1, provides an overview of the research topic and rationale for this thesis, as well as the research design implemented. Chapter 2 is a comprehensive, narrative literature review, which further explores the current literature on the role of Facebook as a mechanism for social support, and how that can affect health. Chapter 2 will also explore the health disparity between regional and metropolitan Australians (AIHW, 2016; Bourke et al., 2012; Kelly et al., 2010), and discuss the role that Facebook-based social support might play in health outcomes for those populations.

Chapter 3 will explore Research Question 1 (*'Does the academic literature indicate that social support drawn from Facebook translates in to positive physical or mental health*

outcomes?'), and present the results of a systematic review of the literature focused on Facebook-based social support, and the themes that emerged from a systematic evaluation of the literature. Chapters 4 and 5 will examine Research Question 2 (*'Does social support drawn from Facebook improve health for both regional and metropolitan Australians?'*), and will report the results of a cross-sectional study of the relationship between Facebook-based social support and health in metropolitan and regional Australians. As previously mentioned, Study Two was divided into two articles, reflecting different models and analyses. Chapter 4 will examine the results of Study Two in the context of the buffering hypothesis, whereas Chapter 5 will examine these results in the context of the direct effect hypothesis.

Chapter 6 will explore Research Question 3 (*'How do regional Australians' describe their use of Facebook as a mechanism for accessing social support?'*), and will present the themes identified in the analysis of the semi-structured interviews of regional Australians around the use of Facebook to maintain social connections. Finally, Chapter 7 will discuss the overarching findings of each study, and the implications of each study as it pertains to the Facebook-based social support literature. Additionally, Chapter 7 will discuss the limitations, implications, and future research directions that can be drawn from this thesis.

Chapter 2: Literature Review

The primary focus of this thesis is the role that Facebook can play in providing social support to geographically diverse populations (i.e., metropolitan and regional users), and the effects this can have on health. As such, this chapter will focus on exploring the underlying theories and mechanisms underpinning social support (i.e., the buffering hypothesis, and the direct effect hypothesis), and the effects of social support on health. Additionally, the role that modern computer-mediated communication (CMC) can play on perceptions of social support, and how Facebook can be integrated into the social support mechanism will also be examined. Additionally, the health disparity found in regional areas will be explored, and the role that geographical location may have on health outcomes will be discussed. Finally, an exploration of the role that Facebook and social support may play in influencing health outcomes across these areas will be discussed.

The Need to Belong

Human beings are, by and large, social animals having evolved to communicate and cooperate with other human beings (Baumeister & Leary, 1995; Taylor, 2011). Most people feel a strong need to belong and for consistent and positive social interactions with others (Baumeister & Leary, 1995). Productive social interactions result in increased positive mental states, greater feelings of well-being, and are generally perceived to be pleasurable (Baumeister & Leary, 1995; Haslam et al., 2017; Taylor, 2011). This type of social interaction can lead to greater motivation to develop and maintain long-term positive social relationships. This need for positive social interactions and relationships can drive individuals to seek out other persons to interact with, often with the conscious or unconscious intent of developing positive and stable relationships, both platonic and romantic (Baumeister & Leary, 1995; Taylor, 2011). These relationships can range from close personal friendships, persons with mutual shared interests and activities, or social workplace relationships, and

usually are between persons with shared commonalties, such as political views, socioeconomic status (Berscheid & Reis, 1998; Walton et al., 2012). These commonalities foster a sense of belonging to a group who have shared interests, life experience, and values (Baumeister & Leary, 1995; Berscheid & Reis, 1998; Walton et al., 2012)

The absence of belonging can lead to loneliness, which is the adverse feeling that can occur when an individual perceives their social interactions to be negative or lacking in connection, as well as the loss of social relationships, such as the death of a friend (Franklin, 2012; Franklin & Tranter, 2008; Pittman & Reich, 2016). Increased levels of loneliness can lead to anger, depression, or suicidal ideation (Franklin, 2012; Franklin & Tranter, 2008; Pittman & Reich, 2016). Most individuals will seek out positive social interactions to increase feelings of happiness and well-being that come from these interactions, and to avoid feelings of loneliness (Baumeister & Leary, 1995; Franklin, 2012; Franklin & Tranter, 2008).

To this end, most people have complex social systems and environments they operate within (Baumeister & Leary, 1995; Cohen & Wills, 1985; Taylor, 2011). These systems and environments can range from immediate family, extended family, friends, acquaintances, workplaces, social hobbies, and more recently, online communities (Cohen et al., 1985; Taylor, 2011). One of the major advantages of increased positive social interactions and feelings of social connection is the support that comes from being included in social networks (Cohen et al., 1985; Cohen & Wills, 1985; Cole et al., 2017; Taylor, 2011).

Social Support

Social support is defined as the extent to which an individual feels a sense of belonging and value to a social network based upon communication and reciprocity (Cobb, 1976; Cohen et al., 1985; Heaney & Israel, 2008; Zhang, 2017). Social support is tied into both the perception of and actual levels of integration into, and assistance available from a social network (Cohen et al., 1985; Cohen & Wills, 1985; Machin & Parsons-Smith, 2019;

Uchino, 2009; Zhang, 2017). These social support networks can include friends and family, co-workers, the larger community, and online social networks (Grieve et al., 2013; Indian & Grieve, 2014; Uchino, 2006). Social support has been found to improve health outcomes for individuals, with increased levels of social support decreasing reported levels of health concerns, reducing the likelihood of illness (Cobb, 1976; Cutrona & Suhr, 1992; Kessler & McLeod, 1985; Liu & Yu, 2013), and increasing levels of well-being and improved physical health (Callaghan & Morrissey, 1993; Hale et al., 2005; Nabi et al., 2013; Uchino, 2006).

The Underlying Dimensions of Social Support

Given the complex nature of human social interactions, there are a number of underlying dimensions of social support (Uchino, 2004; Wills, 1991). Social support can be best understood in four broad concepts: emotional support, tangible support, information support, and companionship support (Taylor, 2011; Uchino, 2004; Wills, 1991). These four categories provide unique value and effects to individuals with high levels of overall social support:

- Emotional support or providing comfort, encouragement, love, and expressions of caring, is best understood as feelings of nurturing and warmth by one's social circle (Slevin et al., 1996; Taylor, 2011). An example of this is a friend providing expressions of caring and concern during times of emotional stress. Emotional support has been found to provide greater benefits in buffering individuals from stress (Kessler & McLeod, 1984; Taylor, 2011).
- Tangible support is the providing of assistance such as material goods and services (Heaney & Israel, 2008). For example, tangible social support would be helping a friend to move to a new house. Increased tangible support has been associated with decreased negative affect (i.e., feelings of sadness or depression) (Friedman & King, 1994).

- Informational support is the provision of practical problem solving assistance, such as advice, or feedback (Taylor, 2011). For example, providing advice aimed at reducing or solving a source of stress. This type of social support has been found to help individuals move through complex life issues such as financial or occupational concerns by providing feedback or advice required to navigate these issues (Uchino, 2004; Wills, 1991).
- Companionship support provides an individual with a sense of social belonging and social companionship. This would be characterised by spending time with friends or family. Increased companionship support has been associated with greater positive life outcomes such as increased employment opportunities (Uchino, 2004; Wills, 1991).

These support mechanisms have been shown to buffer an individual from the negative effects of life stress (Heaney & Israel, 2008; Zhang, 2017).

Theoretical Frameworks of Social Support

There are two dominant hypotheses proposed that explain the positive effects that social support has on physical and mental health (Cohen & Wills, 1985; Taylor, 2011). These two dominant hypotheses are known as the buffering hypothesis and the direct effect hypothesis (Cohen & Wills, 1985; Taylor, 2011). These hypotheses have found social support to be beneficial in both situational-specific (i.e., when an individual is faced with considerable stress), and under more general conditions (i.e., when an individual is not experiencing adverse life stress) (Cohen & Wills, 1985; Taylor, 2011).

The Buffering Hypothesis. Stress, or the feeling of mental strain or pressure, can be caused by many factors, both internal, such as negative self-perception, and external, such as job loss (Sapolsky, 1994; Zhang, 2017). Low levels of stress can be adaptive and provide motivation for personal or academic success (Sapolsky, 1994; Wright et al., 2013). However,

when stress reaches a higher threshold, this can result in negative outcomes for an individual (Sapolsky, 1994; Zhang, 2017). For instance, as stress increases, a person will often begin to feel that they cannot overcome the catalysing life event, and this can negatively affect other areas of their life, like physical health, or interpersonal relations. High levels of stress, or the negative affect state caused by adverse life events, has been found to be predictive of poorer mental and physical health outcomes (Cobb, 1976; Cohen & Wills, 1985; Heaney & Israel, 2008; Li et al., 2015).

Social support has been shown to mediate the negative effect that stress has on physical and mental health (Cohen & Wills, 1985; Li et al., 2015). The level of social support an individual perceives that they can draw on often buffers the individual from the negative effects of stress (Cohen & Wills, 1985; Zhang, 2017). As such, increased levels of social support has been found to predict greater levels of physical health (Callaghan & Morrissey, 1993; Hale et al., 2005; Nabi et al., 2013; Uchino, 2006), and lower levels of mental distress and illness (Cobb, 1976; Cutrona & Suhr, 1992; Kessler & McLeod, 1985; Liu & Yu, 2013). This is known as the buffering hypothesis, as shown in Figure 2.1 (Cohen & Wills, 1985; Zhang, 2017).

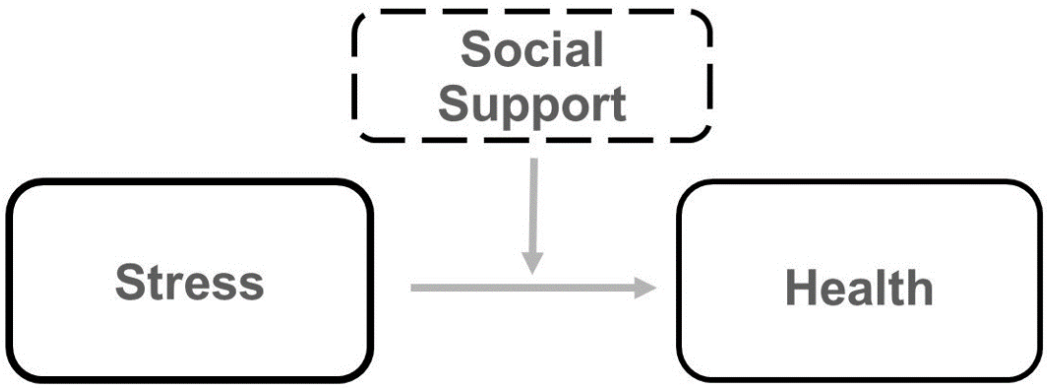

Figure 2.1. The buffering hypothesis model of social support as proposed by Cohen and Wills (1985).

The mechanism behind this buffering effect is known as the stress and coping theory (Cohen & Wills, 1985; Thoits, 1986; Zhang, 2017). This theory posits that life events are stressful only to the extent that that an individual appraises the severity of, and their inability to cope with the event (Cohen & Wills, 1985; Lynch, 2013; Thoits, 1986). An individual with greater perceived social support believes that they have greater practical and emotional interpersonal resources to draw on to both resolve the source of the stress, and to gain emotional support while under stress (Wallston et al., 1983; Zhang, 2017). The greater the perception of available interpersonal resources, the less an individual will perceive the severity of negative life stressors and the likelihood that they will impact on general functioning (Cohen & Wills, 1985; Lynch, 2013).

The buffering effects of social support have been found to mediate the impact of stress on a wide range of mental and physical health outcomes (Cohen & Wills, 1985; Uchino, 2004, 2006). Social support has been found to mediate the relationship between life stress and mental health outcomes such as depression, anxiety, and substance misuse (Taylor, 2011). Social support has also been found to buffer individuals from life and illness-specific stress and the effects such stress can have on physical health concerns specifically cancer, cardio-vascular disease, chronic illnesses, and general illnesses like colds or influenza (Cohen et al., 1997; Kulik & Mahler, 1993; Taylor, 2011).

The Direct Effect Hypothesis. An alternative model for social support is that social support has a beneficial effect for individuals, regardless of stress (Cohen & Wills, 1985; Lakey & Orehek, 2011). Life stress can fluctuate across an individual's life span, and can be brought on by situation-specific events such as divorce, death of a family member, losing a job (Sapolsky, 1994; Zhang, 2017). As such, there may be periods in an individual's life in which there are low levels of life stress such as when an individual is in a strong occupational, financial, and emotional life stage. It has been posited that persons with high

perceptions of social support will have better mental and physical health than those with lower perceived social support (Cohen & Wills, 1985; Taylor, 2011). The direct effects hypothesis suggests improvement occurs without the precipitating stress needed for the stress-buffering model of social support (Lakey & Orehek, 2011).

The theoretical underpinning of the direct effects of social support is that of relational regulation theory (Lakey & Orehek, 2011). This theory suggests that persons regulate their thoughts, feelings, and actions through everyday conversations and activities, rather than through specific discussions of stress and coping (Cohen & Wills, 1985; Taylor, 2011). The personal preferences in socialising activities, conversation topic, and interpersonal relationships are important to this form of social support (Lakey & Orehek, 2011), and research has shown individual preferences for strong, stable relationships can improve levels of perceived social support (Wright, 2012).

In summary, the direct effects of social support have also been found to improve mental health and reduce physical health concerns (Lakey & Cronin, 2008; Lakey & Orehek, 2011). Higher levels of social support have been found to improve well-being, life satisfaction, and decrease mental ill-health symptoms (Lakey & Cronin, 2008; Lakey & Orehek, 2011). Additionally, the direct effect of social support has been found to improve general physical health and health-related behaviours, such as increased exercise and improved diet (Lakey, 2010; Uchino, 2009).

Comparing the Buffering and Direct Effect Hypotheses

While both models of social support hypothesise that individuals will be benefit from increased levels of social support, there are some fundamental differences in the models. The buffering hypothesis, as previously mentioned, indicates that social support will mediate the effects of life stress on physical and mental health (Che et al., 2018; Turner & Brown, 2010). Alternatively, the direct effect hypothesis states that increased levels of social support is

beneficial for individuals regardless of the levels of life stress being experienced (Che et al., 2018; Turner & Brown, 2010).

This fundamental difference can result in changes in effectiveness of these hypothesis, depending on the context of measurement. The buffering hypothesis has been shown to provide a better explanation for the effectiveness of social on health when individuals are face with acute stress caused by serious illness, work stress, or pain (Che et al., 2018; Lee et al., 2006). Alternatively, the direct effect hypothesis has been shown to provide a stronger explanation when individuals are experiencing long term depression and on general well-being (Heshizer & Knapp, 2016; Turner & Brown, 2010). Additionally, the main effects hypothesis is best conceptualised when examining the effects of social support on general well-being (Heshizer & Knapp, 2016; Turner & Brown, 2010).

Actual and Perceived Social Support

While there are differing theories behind the mechanisms of social support, there are also different types of social support that an individual can receive. More specifically, social support can be both actual (i.e., enacted supportive behaviour or acts) and perceived (i.e., the perception that one's social network is willing to engage in supportive behaviours and acts) (Li et al., 2015; McDowell & Serovich, 2007). Actual social support is most often categorised as specific actions that are supportive in nature (i.e., offers of advice, reassurance, or practical assistance; McDowell & Serovich, 2007; Taylor, 2011). Perceived social support is the perception that an individual's social network will offer, or has offered, supportive behaviours (McDowell & Serovich, 2007; Taylor, 2011). It has been shown that higher levels of perceived social support have a greater impact on mental and physical health than actual social support, as individuals with high levels of actual social support can perceived themselves as being not supported (McDowell & Serovich, 2007; Taylor, 2011).

Social Support and Health

Social support and health has been a focus of researchers since the 1970s, with a plethora of studies examining the role that social support can play in improving mental and physical health outcomes (Cobb, 1976; Cohen & Wills, 1985; Cutrona & Suhr, 1992; Kessler & McLeod, 1985; Liu & Yu, 2013). Unsurprisingly, high levels of social support have been found to provide benefits to mental health. Individuals with lower levels of social support being more likely to report increased levels of depression, anxiety, and stress (Taylor, 2011). Additionally, individuals with lower levels of social support have been shown to experience greater rates of mental health concerns, such as post-traumatic stress disorder, major depressive disorder, and social phobias, than persons with higher levels of social support (Brewin et al., 2000; Taylor, 2011; Torgrud et al., 2004). Increased levels of social support have also been linked to greater levels of psychological adjustment to physical diseases like HIV or cancer (Penninx et al., 1998; Taylor, 2011; Turner-Cobb et al., 2002). It is also worth noting that social support has been shown to improve general mental health, even in the absences of distress (Cohen & Wills, 1985; Lakey & Orehek, 2011). Therefore, persons with higher levels of social support report higher levels of well-being and life satisfaction (Chen & Li, 2017; Zhang, 2017).

It has been found that the perception of social support has a greater effect on the improvement of physical and mental health than actual social support (Li et al., 2015; McDowell & Serovich, 2007). Increased levels of perceived social support has been found to both buffer an individual from the effects of stress, as well as have a direct effect on improving health outcomes (McDowell & Serovich, 2007; Taylor, 2011). This difference is likely due to the coping mechanism associated with increased stress, in which the perception of social support allows an individual to believe that, if the need should arise, their social

network would provide the support needed to navigate the difficulties encountered (Li et al., 2015; McDowell & Serovich, 2007).

It is worth noting that persons with higher levels of perceived social support have increased positive physical health outcomes, and show increased recovery times from surgery, are less likely to contract common diseases like colds, and, if contracted, recover faster from these diseases than those with low levels of perceived social support (Cohen et al., 1997; Kulik & Mahler, 1993; Taylor, 2011). Additionally, persons with high levels of social support are shown to demonstrate increased functioning in the cardio-vascular and immune systems (Cohen et al., 1997; Kulik & Mahler, 1993; Taylor, 2011). Higher levels of social support has been found to be beneficial to recovering from many types of cancer, including breast and prostate cancer, and leukaemia (Nausheen et al., 2009) including faster recovery times, lower levels of reported negative symptoms, and increased positive outlook (Nausheen et al., 2009). However, low levels of social support can adversely affect physical health. Individuals with low levels of social support are more likely to experience functional disabilities, greater pain associated with chronic conditions and surgical recovery, more complications when pregnant (e.g., greater levels of depression for the mother, and lower body weight of the child), and lower resistance to common diseases like upper respiratory infections or colds (Holt-Lunstad et al., 2010; Taylor, 2011; Uchino, 2004, 2006, 2009). Individuals with low levels of social support are also at greater risk of death from a wide variety of diseases such as cancer or cardiovascular disease (Holt-Lunstad et al., 2010).

Online Social Support

Many early studies focusing on social support explored the role of face-to-face social support, however, the rise of computer-mediated communication (CMC) has added a new avenue from which a person can draw social support (Boyd & Ellison, 2010). As social support can be both actual and perceived, CMC provides a new medium to receive shows of

actual social support, such as expressions of caring, or advice, as well as increase the perception that an individual has access to a social network that can provide support when needed (Ellison et al., 2011; McDowell & Serovich, 2007). Accessing online social support is focused on such sites and applications that allow for interpersonal CMC (Ellison et al., 2011; McDowell & Serovich, 2007). This can include direct messaging and video chat programs, online gaming platforms, interest-specific forums, or video sharing sites (Ellison et al., 2011; McDowell & Serovich, 2007).

Leung (2006) examined the use of CMC as a form of social esteem building and found, in a sample of Hong Kong adolescents, that individuals who were experiencing greater levels of stress were more likely to draw social support from internet-based social activities, such as online-gaming or instant messaging. This finding demonstrates that CMC has the potential to be used as a mechanism for social support which can be accessed more readily than traditional face-to-face social support. This was also supported in subsequent studies by Valkenburg et al. (2006) and Miller (2008) in samples of Dutch adolescents and individuals with spinal cord injuries, respectively. This form of social support can also be more convenient for persons who are experiencing physical difficulties that can be isolating (Miller, 2008).

The four broad categories of social support discussed previously (emotional, tangible, informational, and companionship support) can be accessed via CMC. However, individuals tend to utilise online sources of social support to express and receive emotional and informational support (Braithwaite et al., 1999; Oh et al., 2013). Most online interactions tend to be written, or textual in nature such as direct messaging, forum posts, or commenting on statuses. As such, expressions of emotional support and the ability to provide information about general and specific topics, are more likely to occur in a written format than offers to

provide physical or instrumental assistance (tangible support), or to offer a sense of belonging (companionship support; Braithwaite et al., 1999; Oh et al., 2013).

While individuals can access social support online, there is a distinct difference between social support drawn via CMC and social support that is accessed via face-to-face interactions (Cole et al., 2017; Frison & Eggermont, 2015; Indian & Grieve, 2014; Wright, 2000). Persons with high levels of internet use or low levels of face-to-face social support are often found to have higher levels of online social support (Cole et al., 2017; Frison & Eggermont, 2015; Indian & Grieve, 2014; Wright, 2000). The inverse relationship is also true of persons with high levels of face-to-face social support or low levels of internet use. This suggests that utilising online social support is distinct from face-to-face social support and is dependent on an individual's level of engagement with CMC. However, with the rapid rise of dedicated socialising sites, it is likely that accessing social support online has become easier, more convenient, and possibly more prevalent in the last decade.

Facebook

Communication on social media has become an increasingly prevalent form of social interaction in the last 10 years (Perrin et al., 2015). Social networking sites (SNSs) have become massively popular, with Facebook approaching close to 3 billion users and more than 2.60 billion monthly users (Facebook, 2020; Statistica, 2020). It is also worth noting that Facebook is incredibly well-utilised in Australia, with 15 million Australians using the SNS every month (Crowling, 2016; Statistica, 2020). With this level of use, Facebook is the most popular and frequently used SNS in Australia, with 65% of the population having a Facebook account (Crowling, 2016; Sensis, 2017; Statistica, 2020).

Facebook has many mechanisms designed to facilitate CMC, both by publicly posting, and privately interacting with members of an individual's social circle. Facebook allows for the communal sharing of personal information through the posting of written

messages, photos, and videos about one's life or interests (Nadkarni & Hofmann, 2012). These posts give Facebook Friends (i.e., other users who have linked their own Facebook accounts with the individual who is posting) the option of expressing their own thoughts and feelings on the content of the post. These can be written comments on the post or non-verbal appreciation ("liking"), and these interactions can be both supportive and confrontational (Machin et al., 2015; Nadkarni & Hofmann, 2012; Oh et al., 2013). In recent years, Facebook has increased the options for non-verbal expression to include photos, gifs (i.e., animated photos), and emojis (Eberl et al., 2020). Facebook also provides mechanisms for private communication via private messaging, where a user can message Facebook Friends directly (Nadkarni & Hofmann, 2012). Private messages are only viewable to the intended recipient and can be sent to single users, or to groups of users. Facebook also includes the ability to join "Facebook groups" with shared interests or experiences (Nadkarni & Hofmann, 2012; Oh et al., 2013). These interest specific groups can be private (i.e., only members can see posts within the group page), public (open to all users), or secret (hidden from all users except pre-existing members).

With all of these mechanisms designed to socialise with friends, family, and virtual strangers, it is reasonable to assume an individual would perceive that social interactions on Facebook can provide access to social support. Interaction with individuals on Facebook can include advice giving, offers of material support, expressions of caring, and feedback on situational and behavioural factors. When framed in the theoretical context of social support, Facebook is likely to provide a perception of emotional, tangible, informational, and companionship support.

This supposition appears to be, at least partially, supported by the literature. In an examination of the health-related social support-seeking behaviours of undergraduate students, Oh et al. (2013) found that students drew emotional, tangible, informational, and

companionship support from Facebook when confronted with health issues. However, only emotional support was predictive of health-related self-efficacy. This result suggests that when confronted with a health concern, emotional support drawn from Facebook mediates the relationship between the stress of being unwell and belief that the student can affect their health through action. This is likely due to an individual's preference for emotional social support over other forms of social support when unwell (Cutrona & Russell, 1990; Oh et al., 2013).

Models of Social Support and Facebook

Within the Facebook-based social support literature, evidence has been found for both the buffering and direct effect models of social support. Facebook-based social support has been found to mediate the negative relationship that life stress can have on mental health (Frison & Eggermont, 2015; Zhang, 2017). For example, it was found that adolescents who encountered increased levels of life stress were more likely seek social support on Facebook, as opposed to engaging with peers interpersonally, which provided a buffer against increased levels of depression (Frison & Eggermont, 2015). Additionally, individuals, when under increased levels of life stress, would engage with Facebook to disclose this distress (Zhang, 2017). This increased engagement with Facebook, and subsequent self-disclosure, would increase expressions of emotional support, which would lead to increased levels of perceived social support and life satisfaction, and decreased levels of depression (Zhang, 2017).

A large number of studies that explore the effects of SNS on health presupposed the beneficial effects of social support without the precipitating stress (i.e., the direct effect of social support) (Huang, 2016; Indian & Grieve, 2014; Oh et al., 2013; Wright, 2012; Wright et al., 2013). The direct effect of Facebook-based social support has been found to lower mental distress, increase feelings of life satisfaction, and improve health-related behaviours (Huang, 2016; Oh et al., 2013; Wright, 2012; Wright et al., 2013). It is worth noting that Cole

et al. (2017) found support for both models of social support when users engaged with Facebook. It was found that when faced with online victimisation, undergraduate students would experience a buffering effect provided by social support from fellow Facebook users, however, individuals who did not experience the stress of online victimisation still benefited from high levels of social support (Cole et al., 2017). This suggests that Facebook-based social support can be used in times of stress but may yield a positive effect in the absence of intense life stress.

In order to draw social support from Facebook, an individual must use the site relatively frequently to interact with friends and family. When examining how Facebook usage predicts well-being, Liu and Yu (2013) found in a sample of Taiwanese undergraduates, frequency (time spent on Facebook) and intensity (number of Facebook Friends on Facebook) was highly predictive of levels of perceived online social support. Perceived online social support was then found to mediate the relationship between Facebook usage, general social support, and well-being. This was replicated by Hu et al. (2017) and Kim (2014). These results demonstrate that the frequency with which an individual uses Facebook is predictive of how much social support can be drawn from the site, and how much that can affect general well-being.

Nabi et al. (2013) explored the effects of Facebook-based social support on mental and physical health in a sample of North American undergraduate students. It was hypothesised that the social support drawn from a large Facebook social support network would reduce levels of perceived stress that impacted mental and physical health. It was found the more Facebook Friends an individual had (the mean number of Facebook Friends for the sample was 375), the greater the perceived social support, which, in turn, mediated the relationship between perceived stress, and mental and physical health.

In addition to the results of Nabi et al. (2013), Frison and Eggermont (2015) found when faced with high levels of daily stress, adolescents are more likely to seek social support from Facebook and were unlikely to seek face-to-face social support. Frison and Eggermont (2015) also found that daily stress was predictive of social support-seeking behaviour on Facebook. This social support-seeking behaviour predicted greater levels of social support, which in turn predicted lower levels of depression. It was also found adolescents were unlikely to seek face-to-face social support, instead relying entirely on Facebook to provide access to the support of their peers (Frison & Eggermont, 2015). This result shows that when faced with high levels of daily stress, adolescents will attempt to buffer this stress by seeking social support via Facebook rather than face-to-face. Not only do these findings show that Facebook-based social support can operate in the framework of stress-buffering, much like traditional face-to-face social support, but may in fact be more convenient for some populations to access.

This conclusion was also reported by Indian and Grieve (2014), who found that in a sample of high and low socially anxious individuals, psychological disposition to face-to-face or CMC can play a role in how social support affects well-being. Within the high socially anxious group, Facebook-based social support significantly predicted greater psychological well-being, whereas face-to-face social support did not. Within the low socially anxious group, face-to-face social support significantly predicted greater psychological well-being, however Facebook-based social support had no significant relationship with psychological well-being. While face-to-face social support was found to be important for persons who have little difficulties socially, for persons with high social anxiety, Facebook-based social support appeared to work in a compensatory manner when more typical social interaction is a barrier.

The findings discussed above present two major points for discussion in the context of this thesis. First, Facebook-based and face-to-face social support can operate as separate forms of social support, which presents a methodological consideration when measuring social support in both contexts. Second, when a person is poorly disposed or unable to draw social support from one method, they can compensate and utilise the other, which presents implications for sampling methodology when exploring Facebook-based social support. To this end, Indian and Grieve (2014) noted that this conclusion can be applied beyond persons with social anxiety, but also to individuals who are unable to socialise face-to-face and suggested that future research could explore how geographically isolated populations use Facebook for social support. While there appears to be significant evidence to support the hypothesis that Facebook-based social support does act as a buffer between stress and mental and physical health outcomes, a systematic examination of the literature has yet to examine these effects and draw systematic conclusions from the full depth and breadth of the available literature.

The Measurement of Facebook-Based Social Support

It is worth noting that the measurement of Facebook-based social support is inconsistent across studies. Studies like Nabi et al. (2013) and Liu and Yu (2013) have used the relationship between indicators of Facebook use, such as time spent on Facebook or number of Facebook Friends to account for the variance within measures of social support. These methods of engagement with Facebook was used to indicate the amount of unique variance within social support that is drawn from Facebook. Several studies, similar to Indian and Grieve (2014) utilise measures of traditional, face-to-face social support that have been altered to reflect social support drawn from Facebook. Items like "*If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me*" are changed to "*If I decide one afternoon that I would like to go to a movie that evening, I could*

easily find someone on Facebook to go with me." When used in conjunction with the original, face-to-face version, the Facebook-based social support measure can be used to capture the unique effect of Facebook on health outcomes (Cole et al., 2017; Indian & Grieve, 2014). This inconsistency in measurement suggests a systematic review of the Facebook-based literature is also needed to reflect on the current methodologies used in this area of study.

Number of Facebook Friends and Facebook-based Social Support

While research into the use of Facebook has shown number of Facebook Friends can predict greater levels of perceived social support, general wellbeing, and other positive outcomes, this effect can be reduced if an individual overextends their Facebook friend group (Greitemeyer et al., 2014). An increased number of Facebook Friends who are not close to the user can often lead to a dilution effect, resulting in less positive outcomes, such as lower levels of perceived social support (Greitemeyer et al., 2014; Kim & Lee, 2011). This, in turn, has been found to result in poorer mental and physical health outcomes.

In a sample of undergraduate students, Kim and Lee (2011) found that number of Facebook friends had a negative curvilinear relationship (i.e., an inverted U-shaped trend line) with perceived social support, which in turn effected the level of subjective well-being. The mean number of Facebook Friends for this sample was 428. This result suggests that, while the number of Facebook Friends a person has on Facebook can be a positive predictor of social support, once a person begins to exceed a reasonable number of Facebook Friends, this effect is reversed. These results would appear to run somewhat counter to the results found by Nabi et al. (2013), however, the latter found that there was significant positive skew, and compensated by using the square root of the total number of Facebook Friends.

An excessive number of Facebook Friends can also influence physical health. Campisi et al. (2012) found that, in a sample of undergraduate students, participants who had greater than 200 Facebook Friends had higher levels of stress and a greater number of upper

respiratory infections over the course of a semester, whereas participants with more selective Facebook Friends lists had a much lower number of infections. This result suggests that stress-buffering effect of social support can be negated by an overextension of a person's online social network, however, neither study directly examined the path between stress, number of Facebook Friends, and Facebook-based social support.

These findings appear to be remarkably consistent with "Dunbar's Number", which suggest that cognitively, an individual can only maintain around 150 interpersonal relationships (Dunbar, 1992). Dunbar's Number appears to translate not only into interpersonal social networks, but into online social networks as well. Dunbar (2016) found that, in two samples of British adults, most Facebook users have between 100 to 250 Facebook Friends. It was noted that there is a natural orientation towards maintaining social networks, both on- and offline, that are of manageable sizes. However, given the ease with which a person can 'friend' a person on SNSs (relative to difficulties of maintaining a face-to-face interpersonal relationship), it is likely that overextension of one's Facebook network is easier when compared to face-to-face friendships. As SNSs like Facebook allow for a greater number of virtual relationships, it is possible that by extending the number of Facebook Friends past approximately 150 persons, the perception of social support decreases, as fewer relationships of significance are apparent.

It is also worth noting the effect that giving social support on Facebook can have on mental health (Inagaki & Orehek, 2017). Giving social support is the act of providing expressions of caring and advice to others (Inagaki & Orehek, 2017; Taylor, 2011). Giving social support can reduce feelings of stress and improve health outcomes for both the giver and the receiver of social support (Inagaki & Orehek, 2017; Taylor, 2011). In the context of Facebook, giving social support has shown limited effectiveness in increasing perceptions of social support (Inagaki & Orehek, 2017; Li et al., 2015). Additionally, the effectiveness of

giving social support to improve mental health outcomes is dependent on the individual's capacity to providing emotional support, with individuals with poor emotional resources often experiencing distress when giving social support (Inagaki & Orehek, 2017; Li et al., 2015).

Facebook-based Social Support and Cyberbullying

While it has been found that positive interactions on Facebook can lead to greater perceptions of social support (Park et al., 2016), negative interactions online (i.e., cyberbullying) can lead to mental distress (Callaghan et al., 2015; Moore et al., 2012; Whittaker & Kowalski, 2015). Cyberbullying is the harassment or bullying via electronic mediums, like SNSs, gaming platforms, or instant messaging (Hinduja & Patchin, 2014; Smith et al., 2008) and can include threats, labelling or name calling, sexual comments, and posting or sending rumours (Hinduja & Patchin, 2014; Smith et al., 2008). Cyberbullying has been found to occur across all age groups, but is most commonly found to occur with teenagers and young adults (Hinduja & Patchin, 2014; Smith et al., 2008). The effects of cyberbullying on a victim can lead to depression, low self-esteem, and suicidal ideation (Callaghan et al., 2015; Hinduja & Patchin, 2014; Moore et al., 2012; Whittaker & Kowalski, 2015).

Surprisingly, there have been few studies which examine the combined effects of Facebook-based social support and cyberbullying on health. It has been found Facebook-based social support can buffer or lessen the effects of cyberbullying on depressive thoughts in older adolescents (Cole et al., 2017). However, it has also been noted that adolescents who identify as LGBTQ experience increased mental distress when offering emotional support via Facebook to peers who have been cyberbullied (McConnell et al., 2017). This would suggest that, while Facebook-based social support can mitigate the effects of cyberbullying on the victim, offering support via Facebook can lead to vicarious exposure that negatively effects

mental health (Cole et al., 2017; McConnell et al., 2017). This likely means that negative social interactions online could be a cofounding variable when measuring the positive effects of Facebook-based social support on mental health.

Regional Australians and Health

According to the Australian Institute of Health and Welfare (2016, 2019b: AIHW), health outcomes for Australians living in regional areas have been found to be worse than those Australians who reside in major metropolitan communities (AIHW, 2016, 2019b; Bourke et al., 2012; Kelly et al., 2010). Mental health concerns like depression, anxiety, substance misuse, and suicide occur in higher rates in regional communities when compared to metropolitan communities (AIHW, 2016, 2019a, 2019b). Additionally, physical health concerns, such as cancer survivorship, asthma, back pain, and obesity are found to occur at higher rates in regional areas. Furthermore, the rates of preventative and positive health-related behaviours are lower for persons who live outside of major metropolitan areas (AIHW, 2016, 2019a).

There are several factors that can contribute to this disparity in health outcomes. For example, there is unequal access to health-related resources in regional communities, with persons in metropolitan areas having better access to primary (e.g., hospitals, GPs) and secondary (e.g., counselling support services) facilities and services (Bourke et al., 2012; Wrigley et al., 2005). Additionally, there is disparity in economic opportunities, with regional communities experiencing increased economic hardship and decreased employment opportunities when compared to metropolitan areas (Alston, 2012; Wrigley et al., 2005). Beyond this, the stigma associated with discussing health, particularly mental health, while not unique to regional communities, is more pronounced (Fraser et al., 2002; Stotzer et al., 2012). Finally, the geographical difficulties can result in social isolation, which has been

shown to have a negative impact on mental health and contribute to the high suicide rate in males who live in regional areas (Alston, 2012; Kawachi & Berkman, 2001).

The Australian Statistical Geography Standard (ASGS) Remoteness Areas criteria (AIHW, 2004), as utilised by the Australian Bureau of Statistics (ABS), classifies Australians as living in five areas of remoteness (ABS, 2016). These classifications are based upon the relative distance to a population centre and the size of that population centre (ABS, 2016; AIHW, 2004):

- Major Cities of Australia: persons residing in or very near to a major metropolitan city (66% of Australians reside within these metropolitan areas),
- Inner Regional Australia: persons residing at some distance from a major metropolitan city, or close to a moderate population centre (21% of Australians reside within these regional areas),
- Outer Regional Australia: persons residing at some distance from a moderate population centre, or close to a small population centre (10% of Australians reside within these regional areas),
- Remote Australia: person residing some distance from a small population centre (2% of Australians reside within these remote areas); or
- Very Remote Australia: persons reside a great distance from any population centre (1% of Australians reside within these very remote areas).

These ratings are based upon the distance and availability of goods and services available at the nearest population centre, as well as the population of that centre (ABS, 2016). Typically, persons living in Inner Regional Australia will live considerable distance from a population centre over 250,000 people or live near to or within a moderate population centre of 50,000. Persons living in Outer Regional Australia will live some distance from a moderate population centre, or live near to or within small population centres of 5,000-18,000

persons. This thesis will focus on individuals living in either Major Cities of Australia, Inner Regional Australia, or Outer Regional Australia.

As previously discussed, social support has often been found to assist persons seeking health information, buffer individuals from stress, decrease feelings of social isolation, and encourage emotional support (Oh et al., 2013; Zhang, 2017). One of the potential barriers to face-to-face social support in regional communities is the relative distance between individuals and population centres, as well as the size of that population centre (Berry et al., 2006; Koopman et al., 2001; Lauckner & Hutchinson, 2016; Vyavaharkar et al., 2010). Greater distances between population centres can discourage traveling to these centres, which can limit the number of opportunities to access face-to-face social support (Koopman et al., 2001; Lauckner, 2016). Additionally, smaller population centres can provide fewer opportunities to find likeminded individuals to connect with compared to major cities, which can result in decreased opportunities to find supportive social networks (Berry et al., 2006; Handley et al., 2012; Lyons et al., 2015). This lack of opportunity can lead to feelings of social isolation and loneliness, which can in turn affect mental health (Alston, 2012; Handley et al., 2012; Kawachi & Berkman, 2001).

Given that Facebook-based social support can be used to compensate for fewer opportunities to draw on face-to-face social support (Indian & Grieve, 2014), it is likely that location will play a role in the utilisation of Facebook as a mechanism for social support. Drawing on the results of Indian and Grieve (2014) and Miller (2008), persons who are poorly disposed to face-to-face interactions or face physical difficulties that result in isolation will utilise CMC and Facebook as a mechanism for social support. When applied to persons in regional communities, these individuals could draw on Facebook-based social support to compensate for reduced opportunities for face-to-face social interactions.

It is worth noting that within the Facebook-based social support literature there appears to be an overreliance on undergraduate and adolescent samples based in metropolitan areas. However, there is an overrepresentation of older Australians in regional communities (Winterton & Warburton, 2011). This means there could be potential issues for mapping the overall findings of the existing literature onto an older, less centralised Australian population, like those in regional communities.

Another point of interest is that, in a 2017 evaluation of social media usage of Australians, Sensis (a marketing services provider) found that regional users of Facebook had, on average, 20% less Facebook Friends than metropolitan users, and were more likely to have friendship networks of around 200 or less (Sensis, 2017). It has been noted that larger numbers of Facebook Friends can be detrimental to the use of Facebook as a mechanism for social support (Campisi et al., 2012; Greitemeyer et al., 2014; Kim & Lee, 2011). It is likely that, when compared to metropolitan users with larger Facebook Friends lists of weaker relationships, regional Australians who use social media will experience greater perceived social support from Facebook usage. Additionally, it is likely that regional users, to compensate for the reduced opportunities to engage in face-to-face communication (Koopman et al., 2001; Lauckner & Hutchinson, 2016; Vyavaharkar et al., 2010), will utilise Facebook for social support more than metropolitan users.

It is important to note that while regional Facebook users would likely have greater levels of perceived social support drawn from Facebook when compared to metropolitan Facebook users, this would not result in greater overall mental or physical health outcomes when compared to persons from the city. The reason for this is two-fold. Firstly, the regional users are still at a significant disadvantage regarding access to resources, ranging from health services to income (Bourke et al., 2012; Fraser et al., 2002; Wrigley et al., 2005). Second, while the social support drawn from Facebook may be greater for regional Australians, the

distance between persons, and the limitations of a smaller population from which to draw face-to-face social support, would still limit the improvements to health that social media use can provide.

The current research aims to investigate how Facebook-based social support can buffer stress and improve physical and mental health outcomes for metropolitan, and regional Australian users. The implications of this research will have practical applications for metropolitan and regional users regarding social media behaviour. If social media usage, specifically Facebook, provides better perceived social support, and by extension better physical and mental health outcomes for regional Australians, this research will provide a rationale for increased awareness and education into the use of Facebook-based social support and its benefits in Australian regional communities. This research will also provide a much-needed window into the online behaviours of Australians who live in regional communities and provide implications for future research and educational programs to improve social support for at-risk for metropolitan and regional populations.

Firstly, this research will provide the first systematic review of the effects of broader Facebook-based social support. Study 1 will provide a comprehensive overview of the positive effects of Facebook-based social support can have on health outcomes (if any). Secondly, while many studies have explored how Facebook can improve perceived social support, it has been noted that there is a distinct absence of research into regional Facebook users (Indian & Grieve, 2014). By quantifying any differences in an Australian population, and how they may influence physical and mental health outcomes, inferences about how to most effectively use Facebook-based social support to buffer an individual from stress can be made (Study 2). Finally, by investigating the possible differing themes in why and how Australian regional persons use Facebook would provide a solid theoretical foundation for future studies seeking to explore these differences in greater detail (Study 3).

As previously mentioned, prior to this research, no systematic examination of the Facebook-based social support literature had been conducted. Without a rigorous and systematic examination of the previous literature examining the effects of Facebook-based social support on health, it is difficult to make comprehensive predictions about the effects on a specific population. To this end, the following chapter will be a systematic literature review of previous studies that examine Facebook-based social support.

Chapter 3: Facebook-Based Social Support and Health: A Systematic Review

As previously discussed in Chapter 1, the first study in this thesis comprises a systematic literature review. This systematic review of the literature aimed to answer the first research question: 'Does the academic literature indicate that social support drawn from Facebook translates into positive physical or mental health outcomes?' To the best of the author's knowledge, there was no prior systematic literature review that aimed to examine the effects of Facebook-based social support on physical or mental health outcomes.

This review was submitted to the journal "*Psychology in Popular Media Culture*" in December 2018, and was accepted for publication in April 2019. *Psychology in Popular Media Culture* is an American Psychological Association journal and has an impact factor of 1.96 (2019). The citation for this article is:

Gilmour, J., Machin, T., Brownlow, C., & Jeffries, C. (2019). Facebook-based Social Support and Health: A Systematic Review. *Psychology of Popular Media Culture*. *9*(3), 328–346. doi: 10.1037/ppm0000246.

This paper adds to both the published academic literature, and this thesis in several ways. First, it provides a rigorous systematic evaluation of the existing literature on the effects of Facebook-based social support on psychical and mental health. Second, it evaluates the quality of the existing evidence on the topic of social support drawn from Facebook. Finally, this study draws out methodological and psychometric differences across the literature and provides recommendations for future studies. For all material related to this study, including measures used, please see Appendix A. The study is presented below as the full journal article, as published in *Psychology of Popular Media Culture*.

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Facebook-Based Social Support and Health: A Systematic Review

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The rise of social networking sites have provided a new avenue for interpersonal communication. Facebook, as the largest social networking site targeted at providing access to interpersonal social networks, has been found to be a source of social support. Facebook-based social support has been found to be beneficial across a number of health outcomes; however, no systematic evaluation of these effects, and the factors that influence them, has been conducted. A systematic review has been conducted to examine the effects of Facebook-based social support on health. A total of 27 studies met selection criteria and were included in the final review. Facebook-based social support was found to impact health across three major domains: general health, mental illness, and well-being. Facebook-based social support was found to improve general physical and mental health, as well as well-being. It was also found reduce to symptomology associated with mental illness, including depression, anxiety, online victimization, and loneliness. There were a number of behavioral factors that influenced these outcomes, including social comparison, communication competence, and self-disclosure. Although the effects of Facebook-based social support was found to be generally positive, future research is required to explore how best to maximize this new form of social support.

Public Policy Relevance Statement
This article is a review of the literature on the use of Facebook to access social support and how that can affect health outcomes. Overall, using Facebook as a mechanism for social support was found to improve health outcomes across domains including improving mental health, physical health, and well-being and reducing mental illness symptomology, such as depression. The use of Facebook to positively interact and gain support from friends and family can be beneficial to a person's overall well-being.

Keywords: social support, Facebook, health, well-being, mental illness

Communication on social media has become an increasingly prevalent form of social interaction over the last 10 years (Perrin et al., 2015). Social networking sites (SNSs) have increased in popularity, with Facebook approaching 2.23 billion monthly users (Facebook, 2018). Facebook allows for the communal sharing of personal information (posting written messages, photos, and videos about one's life or interests) for others to comment on or show nonverbal appreciation ("liking"), as well as private communication (private messaging), and the ability to join "Facebook groups" with shared interests or experiences (Nadkarni & Hofmann, 2012; Oh, Lauckner, Boehmer, Fewins-Bliss, & Li, 2013). The motivations for using Facebook have been mainly identified as the need to belong and for self-presentation, rather than informational support, with most users utilizing the SNS to maintain relationships or pass time (Nadkarni & Hofmann, 2012; Ryan, Chester, Reece, & Xenos, 2014). This makes Facebook distinct from other sites like Twitter, in which users are motivated by interests in celebrities, sports news, and general entertainment (Hargittai & Litt, 2011). In addition, Facebook is distinct from Instagram, in which users are motivated by archiving their experiences and browsing other site users' photos (E. Lee, Lee, Moon, & Sung, 2015). Although Twitter does not appear to play a role in the maintenance of long-term social relationships, Facebook does provide a virtual medium for maintaining these types of connections (Petersen & Johnston, 2015), suggesting Facebook may be a pertinent source of social support.

Social support is the extent to which an individual feels a sense of value and belonging to a social network that is based upon communication and reciprocity (Cobb, 1976; Heaney & Israel, 2008; House, 1981). Social support is often best conceptualized in four broad concepts: emotional support (providing comfort and expressions of caring), instrumental support (providing assistance such as material goods and services), informational support (pro-

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viding practical, problem-solving assistance, such as advice or feedback), and appraisal support (providing information and feedback that is useful in self-evaluation; House, 1981; Zhang, 2017). Social support can be both actual (i.e., enacted supportive behavior or acts) and perceived (i.e., the perception that one's social network is willing to engage in supportive behaviors and acts; McDowell & Serovich, 2007). It has been found that the perception of social support has a greater effect on improving physical and mental health than actual social support (Li, Chen, & Popiel, 2015; McDowell & Serovich, 2007) and provides a greater buffer against mental health concerns, such as stress. Social support has been shown to moderate the negative effect that stress has on physical and mental health (Cohen & Wills, 1985; Li et al., 2015).

Research into social support drawn from Facebook has found that it can have a positive effect on various outcomes. These have included depression (Frison & Eggermont, 2016; Wright et al., 2013), anxiety (Indian & Grieve, 2014), well-being (Huang, 2016), physical health (Cavallo et al., 2014), and loneliness (Seo, Kim, & Yang, 2016). In addition, there are several factors and behaviors that are intrinsic to Facebook use that can influence the amount of social support a person perceives they have from this SNS. For example, number of friends (Nabi, Prestin, & So, 2013), level and emotional content of interactions (Seo et al., 2016), self-disclosure (Huang, 2016), communication competence (Wright et al., 2013), and social comparison to other Facebook users (Jang, Park, & Song, 2016), which can have both positive and negative effects on perceptions of social support.

Facebook use has been found to negatively affect mental health, including increased anxiety, depression, body image and disordered eating issues, drinking cognitions, and alcohol use (Frost & Rickwood, 2017). However, although Facebook can have significant negative effects on mental health, there has been a significant body of work that examines Facebook as a mechanism for enhancing social support. Facebook has become a fixture in developed countries, with more than 1.74 billion people accessing Facebook via mobile devices (Statista, 2018b). This means that this form of online social support can be utilized as a part of everyday life (Frison & Eggermont, 2015) as well as when individuals are not readily able to access face-to-face social support (Indian & Grieve, 2014). Given the extent to which Facebook usage has become common, a systematic examination of the potential benefits of socializing via Facebook, not just the disadvantages, should be conducted.

The aim of this study was to provide a comprehensive and systematic review of the state of the literature pertaining to Facebook-based social support. The research question for this study was as follows:

> *Research Question:* Does the current literature indicate that social support drawn from Facebook translates into positive physical or mental health outcomes?

By answering this question, this review will provide direction on how to utilize Facebook in a way that is beneficial for everyday users. At the time of writing, no such review known to the authors existed in the literature, and there has been a significant focus on the negative effects of Facebook (mis)use (Frost & Rickwood, 2017). Facebook-based social support has been found to be beneficial for many mental and physical health outcomes (Frison & Eggermont, 2015; Nabi et al., 2013); however, these findings have not been systematically collated and reviewed. Given that studies examining Facebook-based social support utilise diverse methodologies and report varied conclusions, a comprehensive review would provide future research in this area with a valuable overview of the current state of the literature, recommendations for methodology,and future directions for research.

Method

Search Strategy

The databases searched were Science Direct, PsycINFO/ARTICLES, PubMed, Scopus, Wiley, and Web of Science. The initial search was independently conducted by three researchers and included articles from January 1, 2007 to September 19, 2017 (Facebook became open to the general public on September 26, 2006; Facebook, 2018). An additional follow-up search was conducted by three researchers to include articles from September 20, 2017 to July 17, 2018, before final article preparation. Search terms were developed using published articles that relate to Facebook as a mechanism for social support ("social networking site" OR "online social network" OR "sns" OR "facebook" OR "social media" AND "social connect*" OR "social inclusion" OR "social support" OR "perceived support" OR "online support" OR "belong*" OR "social capital" AND "mental health" OR "physical health" OR "quality of life" OR "mental illness" OR "physical illness" OR "well-being" OR "wellbeing" OR "well being" OR "life satisfaction" OR "depression" OR "anxiety" OR "stress" OR "self-efficacy" OR "self efficacy" OR "self-esteem" OR "self esteem" OR "lone*"). Search terms were performed on article titles, keywords, and abstracts.

Selection Criteria

Given the nature of the research question, only studies that were quantitative, experimental, or cross-sectional in design, and in English were selected for inclusion. In addition, only studies that focused on Facebook as the primary form of social media used, or studies which examined online social support in which a large portion of the sample used Facebook, were included. Studies were required to measure social support, specifically in either the context of Facebook-based social support or online social support more broadly. Studies that conceptualized aspects of Facebook use (e.g., number of friends) as measures of social support were also included. Studies were required to measure at least one of the following: mental health–related outcomes, general mental well-being, or general physical well-being. In addition, Facebook-based social support must be hypothesized to predict or have a relationship with one of the mental or physical health outcomes.

Exclusion criteria included articles that were qualitative in nature, due to the quantitative focus of the research question and inclusion criteria (i.e., the measurement of social support and health outcomes). Gray literature was also not included. Nonresearch publications (e.g., government reports) and research that was unpublished were excluded because they had not been subjected to a peer-review process. These studies have been shown to rarely impact the results of systematic reviews, except in reviews with few studies or in an area of the literature in which authors

have questionable conflicts of interests (Hartling et al., 2017). Finally, dissertations were also excluded because the value of such studies in systematic reviews has been found to vary (Hartling et al., 2017). Studies that focused on chronic conditions were also excluded from this review because the research question was focused on the general physical and mental health outcomes that could be applied to the general population.

Data Extraction

Duplicate articles were screened and removed from the subsequent list of potential articles. The list of articles was divided in half, with two researchers each reviewing one half of the list, and the third researcher reviewing the entire list. This ensured that all articles were examined by two researchers, with a third to act as a moderator should disagreement ensue. Following the review of the title and abstract, this process was repeated for the full text review of articles.

Results

The aim of this review was to systematically appraise the state of the current literature, as it relates to Facebook-based social support and how it can affect mental and physical health outcomes. The search for articles followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Liberati et al., 2009). Twenty-seven papers were included in the final review: 24 papers from the initial search and three papers from the follow-up search (see Figures 1 and 2 for PRISMA flowcharts for the initial search and follow-up search, respectively).

The data extracted from these studies focused on study objective, design, samples, measures used, how Facebook-based social support was measured, analysis, and relevant results to the research question (Table 1). The extraction process targeted the relationship between Facebook-based social support and mental and/or physical health outcomes. The following results are organized by the mental/physical outcomes measured in the study. As several studies focused on more than one outcome, wherever possible, these studies will be included in the factor most relevant to the research question stated in the study.

Methodological Quality

To evaluate the risk of bias and overall research quality for each study, the Newcastle-Ottawa Scale adapted for cross-sectional Studies (Herzog et al., 2013) and the Critical Appraisal Skills Program (CASP) for Randomized Control Trials (CASP, 2017) were used (Table 2). Two researchers performed the quality assessments separately and then compared the results to evaluate any disagreement. For the 26 studies that were of cross-sectional design, the Newcastle-Ottawa Scale was used as the primary measure of bias. Overall, 15 studies were found to be of good quality, eight studies were found to be of satisfactory quality, and three studies were found to be of unsatisfactory quality (Table 2). The CASP for Randomized Control Trials (CASP, 2017) was used to assess the quality of the single randomized control trial, which was found to be of fair quality.

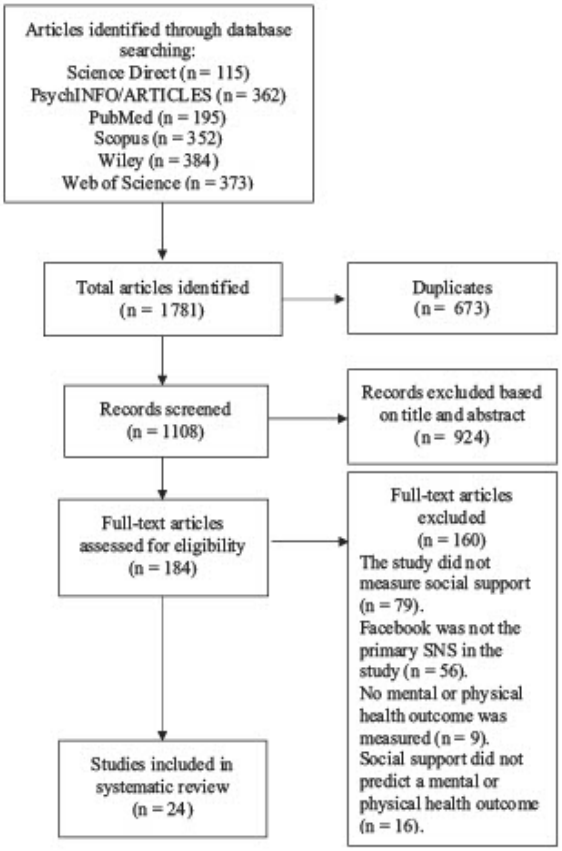

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analysis flow chart for article inclusion based on initial search (19 September, 2017).

Findings

The findings demonstrated that Facebook-based social support had effects on three broad categories: general health, mental illness, and well-being. It was found that studies focused on measuring general health outcomes, mental illness symptoms, or well-being, with a number of subcategories being found within each category. The reason for the categorization of mental illness and well-being separately is the desired goals of each concept. The desired goal of treating mental illness to reduce symptoms until symptomology is absent (Slade, 2010). Well-being can be improved in persons with little or no symptoms of mental illness and reflects positive mental states, rather than mental distress (Slade, 2010).

Studies comprising the general health category focused on the effects of Facebook-based social support in improving health and included two factors: physical health and mental health. Studies that focused on the use of Facebook-based social support in the reduction of mental illness symptoms were included in the mental illness category and included factors related to depression, anxiety, online victimization, loneliness, and Facebook addiction. Studies that focused on the use of Facebook-based social support to

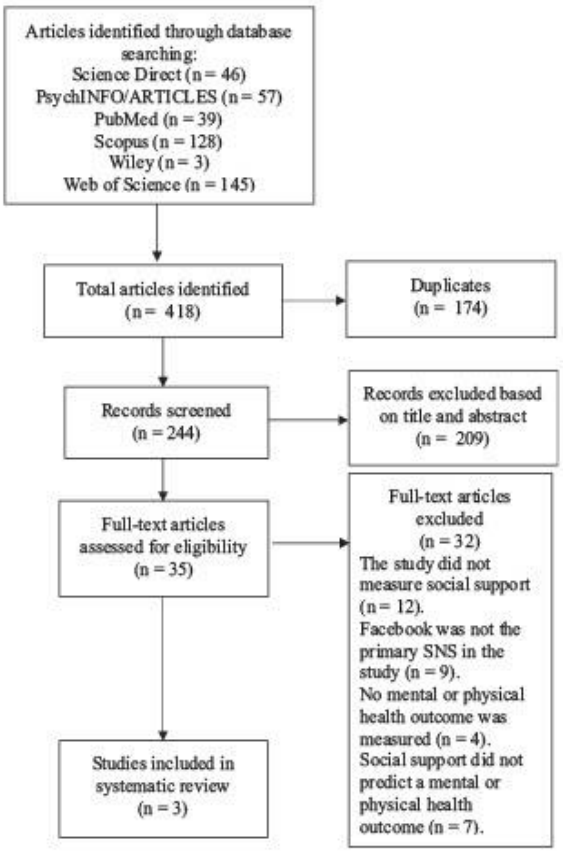

Figure 2. Preferred Reporting Items for Systematic Reviews and Meta-Analysis flow chart for article inclusion based on follow-up search (17 July, 2018).

increase positive mental states, distinct from mental illness, such as overall well-being and satisfaction with life were included in the well-being category and included a factor related to professional well-being. The findings for each factor will be structured in two parts: description of the studies (sample characteristics, effect sizes, and study quality) and discussion of results, including implications.

Health

Physical health. Three studies (Cavallo et al., 2014; Nabi et al., 2013; Oh et al., 2013) were identified that focused on the effects of Facebook-based social support on physical health. Two of these studies found that Facebook-based social support has a positive effect on certain processes related to physical health and health-improving behaviors (Cavallo et al., 2014; Oh et al., 2013). The third study examined the role of Facebook-based social support on reducing the effects of stress on physical health and psychological wellbeing (Nabi et al., 2013).

Cavallo et al. (2014) found that when examining exercise levels and intentions, increases in companionship support were positively associated with increased intention to exercise and indirectly affected increases in physical activity. In addition, increases in esteem support (encouragement related to exercise ability) via Facebook were positively associated with increases in physical activity. Informational support was not found to be predictive of intentions to exercise, or of physical activity. This is possibly due to the effects of taking part in a structured exercise program; thus, the need for informational support on Facebook was negligible (Cavallo et al., 2014).

Nabi et al. (2013) explored Facebook-based social support in the context of reducing the effect of stress on physical health and psychological well-being. It was found that the more friends an individual had on Facebook, the greater the perceived social support, which in turn, indirectly affected the relationship between perceived stress, and physical health and psychological well-being. It is worth noting that this relationship was found only in individuals experiencing high levels of stress.

In an examination of the health-related social support–seeking behaviors of undergraduate students, Oh et al. (2013) found that students drew emotional, instrumental, informational, and appraisal support from Facebook when confronted with health issues. However, only emotional support was predictive of health-related self-efficacy (i.e., the belief that students had a sense of control and education surrounding managing health concerns).

Mental health. Five studies (Jang et al., 2016; Lima, Marques, Muiños, & Camilo, 2017; McCloskey, Iwanicki, Lauterbach, Giammittorio, & Maxwell, 2015; Wright, 2012; Zhang, 2017) were identified that focused on the effects of Facebook-based social support on aspects of general mental health. Overall, it was found that Facebook-based social support was predictive of better mental health as well as decreased levels of mental distress (Jang et al., 2016; Lima et al., 2017; McCloskey et al., 2015; Wright, 2012; Zhang, 2017). Jang et al. (2016) measured mental health as a single construct; Lima et al. (2017) measured mental health, mental well-being, and physical health; McCloskey et al. (2015) focused on quality of life; Wright (2012) focused on how emotional support reduces stress in undergraduate students; and Zhang (2017) examined life satisfaction and depressive symptoms.

Facebook-based social support was found to predict better mental health; however, social comparisons on Facebook were detrimental to mental health (Jang et al., 2016). Emotional support drawn from Facebook was found to reduce perceived stress, although greater physical and social attraction to Facebook friends was a factor that can improve the levels of support drawn from Facebook (Wright, 2012). Lima et al. (2017) found that the number of Facebook friends was negatively associated with bonding social capital or the development of reciprocal relationships (of which social support was a factor). This resulted in a negative indirect effect on health, including well-being, physical and mental health (Lima et al., 2017).

McCloskey et al. (2015) examined the evidence for the construct validity and factor structure of Facebook-based social support. Facebook-based social support was found to have four distinct factors: perceived support, emotional support, negative support, and instrumental support. Correlations between physical, psychological, social, and environmental quality of life, and depression were examined. Negative support (i.e., negative feedback on Facebook) was found to have a positive relationship with depression and a negative relationship with physical quality of life. Interestingly, emotional support was negatively related to psychological

Table 1
Summary of Included Articles by Outcome (N = 27)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Health										
General physical health										
Cavallo et al. (2014)	United States	To evaluate the efficacy of FB in increasing SS for physical activity	Randomized control study. Participants had to be <25 years, report <30 min physical activity and >30 min FB usage.	134 American female undergraduate students, <25 years old	SIPAQ, PAQ, author developed scales of exercise attitude, intension, and perceived behavioral control	SIPAQ was modified to include forms of FB communication	Intention to exercise and physical activity	None	SEM	Companionship support significantly predicted intension to exercise (β = .27), which indirectly affected levels of physical activity (β = .13). Esteem support significantly predicted physical activity (β = .26). Information support did not significantly predict either outcome.
Nabi, Prestin, and So (2013)	United States	To assess if the number of FB friends has an effect on SS and physical illness and WB	Cross-sectional survey	401 FB-using American undergraduate students; 78% female, age M_{age} = 19.90 (*SD* = 1.51)	PILL, GMPS, SRRS, SNI, MSPSS, SWLS, and FB usage.	PUI and SNI	Perceived stress, physical illness, and psychological WB	Gender and stress level	SEM	Overall, number of FB friends predicted higher levels of SS (β = .08), which reduced perceived stress (β = −.30) and, in turn, indirectly reduced physical illness (β = −.37) and increased psychological WB (β = .45). Number of FB friends directly improved psychological WB (β = .12). High-stress individuals reported number of FB friends predicted higher levels of SS (β = .14), whereas low-stress individuals did not.
Oh, Lauckner, Boehmer, Fewins-Bliss, and Li (2013)	United States	To test how using FB for health reasons effects SS and health self-efficacy	Cross-sectional survey	291 American undergraduate students; 68% female, M_{age} = 29.	ISEL, health-related support seeking, and self-efficacy items	ISEL was altered to measure health-related SS drawn from FB	Health self-efficacy	None	SEM	Although health-related support seeking was predictive of all factors of perceived SS, only emotional support predicted greater levels of health self-efficacy (β = .27).

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
General mental health										
Jang, Park, and Song (2016)	South Korea	To assess how social comparison on FB affected perceived SS and mental health	Cross-sectional survey	358 South Korean university students	INCOM, PSSS, RANDMHI, SES, and FB use	INCOM was adapted to measure social comparison via FB; FB use was measured by evaluating the frequency of posts, and viewings	Mental health	None	SEM	FB use significantly predicted higher levels of social comparison (β = .15) and perceived SS (β = .13). Perceived SS significantly predicted better mental health (β = .15). Social comparison predicted worse mental health ($\beta = -.12$).
Lima, Marques, Muiños, and Camilo (2017)	Portugal	To examine the effects of FTF and FB-based friendships on health outcomes	Cross-sectional surveys.	Study 1: 350 participants, 44% female, M_{age} = 46.4 (*SD* = 17.1)	Study 1: HSM, ESS, SHQ SF-36, RUCLALS, SSSS, MII, SII, GBI, BSCS.	Study 1: Two versions of the HSM and ESS: FTF and FB-based friendships, as well as SS as a factor of bonding capital	Study 1: Physical health, mental health, and subjective WB	Study 1: Age, gender, SES, education, living alone	Study 1: SEM and mediated regression	Study 1: FB friendships was not a significant predicator of bonding capital (SS was a factor) or health.
				Study 2: 803 participants, 50% female, M_{age} = 44.1 (*SD* = 15.6).	Study 2: As for Study 1, plus RSES.	Study 2: As for Study 1	Study 2: As Study 1, plus self-esteem	Study 2: None	Study 2: SEM	Study 2: FB friendships had a negative relationship with bonding social capital ($\beta = -.35$), and had negative indirect effect on health ($\beta = -.19$).
McCloskey, Iwanicki, Lauterbach, Giammittorio, and Maxwell (2015)	United States	To establish a FB-based measure of SS and examine the relationships between FBBSS and depression, and quality of life	Cross-sectional survey	633 American undergraduate students, 70% female, Mdn_{age} = 21 years	FMSS (developed), ISSB, MSPSS, PHQ-9, WHOQOL-BREF	FMSS was designed to measure SS drawn from FB	Depression, physical health, and quality of life	None	EFA and correlation	FBBSS was found to have four factors (perceived, emotional, negative, and instrumental). Emotional and negative SS had a positive relationship with depression (r = .17, r = .11) and a negative relationship with psychological quality of life ($r = -.17$, $r = -.24$). Negative support also had negative relationships with physical health ($r = -.30$), social relationship ($r = -.17$), and environmental quality of life ($r = -.23$).

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Wright (2012)	United States	To examine the predictors of FB relationships and the effect of FB-based emotional support on perceived stress in college students	Cross-sectional survey	283 American college students, 62% female, M_{age} = 19.95 (*SD* = 1.95).	MPHM, IAS, ESS, GMPSS	Participants were asked to complete measures for FB relationships	Perceived stress	None	Multiple regression	Physical and social attraction among FB partners was found to predict emotional support (β = .19; β = .31). Emotional support predicated lower levels of perceived stress for FB partners (β = −.21).
Zhang (2017)	Hong Kong	To assess how self-disclosure on FB influences SS, life satisfaction, and depression	Cross-sectional survey	560 Hong Kong university students, 60 % female, age range: 18–25 years	GDS, PHQ-9, SWLS, MOS	FB usage was measured. GDS was modified to measure disclosure on FB. Items that measured enacted SS on FB were used.	Mental health and self-disclosure	Gender, year in school, major, residence, time spent on FB, and FB network size	Hierarchical regressions	Amount/intimacy, honesty, and intent of FB disclosure positively predicted greater levels of enacted FBBSS (β = .23; β = .25; β = .24), though only amount/intimacy of FB disclosure negatively predicted perceived SS (β = −.17). Enacted FB BSS predicted greater levels of perceived SS (β = .19). Both enacted FBBSS and perceived SS predicted greater satisfaction with life (β = .12; β = .25), but only perceived SS significantly predicted lower levels of depression (β = −.09).
Mental illness Depression										
Frison and Eggermont (2015)	Belgium	To test how online and FTPSS and support seeking buffers the relationship between daily stress and depression	Cross-sectional survey	910 Belgian high school students, 52% female, M_{age} = 15.44 (*SD* = 1.71)	MSPSS, ASQ, CES-D, author-developed measures of FTPSS and FBBSS seeking	MSPSS was modified to rate perceptions of SS through FB	Adolescents' depressive mood	Gender	SEM	Daily stress significantly predicted increased SS seeking through FB (β = .11), which in turn predicted high levels of FBBSS (β = .54), which predicted lower levels of depressed mood (β = −.12). SS seeking through FB predicted greater levels of depressed mood (β = .18).

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Frison and Eggermont (2016)	Belgium	To test how passive and active FB use affects OSS and depressive mood. Gender differences were also explored.	Cross-sectional survey	910 Belgian high school students, 52% female, M_{age} = 15.44 (*SD* = 1.71)	MSPSS, ASQ, CES-D, author-developed measures of FB use	MSPSS was modified to rate perceptions of SS through FB	Adolescents' depressive mood	Gender	SEM	In adolescent girls, active public and private FB use significantly predicted greater FBBSS (β = .27, β = .27), which in turn predicted lower levels of depressed mood (β = −.12). In adolescent boys, active public FB use significantly predicted greater FBBSS (β = .18) and greater levels of depressed mood (β = .25).
Park et al. (2016)	United States	To examine the relationships between FB SS and depression	Cross-sectional study.	Study 1: 61 undergraduate students, 61% female, M_{age} = 19.95 (*SD* = 1.13)	Study 1: SPS, BDI-II	Study 1: Participants FB walls were examined for positive and negative disclosures, as well as actual support. SPS was modified for FBBSS.	Study 1:	Study 1: None	Study 1: Hierarchical logistical regressions using generalized linear mixed models	Study 1: Participants with higher depression levels drew greater actual support from FB when they disclosed negative feelings (*b* = .05), whereas those who did not disclose did not draw support. Perceived SS had a negative relationship with depression (*r* = −.37).
				Study 2: 42 individuals, 21 diagnosed with MDD and 21 control participants; 86% female, M_{age} = 24.95 (*SD* = 7.40)	Study 2: As for Study 1	Study 2: As for Study 1	Depressive symptoms Study 2 Same as Study 1	Study 2: As Study 1	S2. As above.	Study 2: Participants with MDD drew greater actual support from FB when they disclosed negative feelings (*b* = 1.28), whereas those who did not disclose did not draw support. This was not found for participants without MDD. Perceived SS had a negative relationship with depression ($\eta p2$ = .27). Participants with MDD had experienced a greater disparity between actual and perceived FBBSS ($\eta p2$ = .18).

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Wright et al. (2013)	United States	To explore the influence of communication competency on FB and FTF support, and its effects on depression	Cross-sectional survey	361 American undergraduate students, 54% female, M_{age} = 20.26 (*SD* = 2.72)	SMIM, CCS, CMCCS, SSQ, CES-D	SMIM assessed motives for using FB. Two versions of the SSQ was used, FB and FTFSS.	Depression	None	SEM	Communication competence was found to positively predict FB and FTFSS (β = .07; β = .42), respectively, which in turn, predicated lower levels of depression (β = −.12; β = −.23).
Anxiety										
Indian and Grieve (2014)	Not stated	To examine how FB-related and FTFSS predict subjective WB in socially anxious and nonanxious individuals	Cross-sectional survey	299 FB users, 86% female, M_{age} = 28.35 (*SD* = 10.88)	Mini-SPIN, ISEL, FB-adapted ISEL, SWLS	ISEL was adapted to measure SS drawn from FB	Subjective WB	Gender	Hierarchical multiple regressions	In the low socially anxious group, FB-related SS support was not a significant predictor of subjective WB, over and above offline SS (β = .35). In the high socially anxious group, offline SS was a significant predictor of higher subjective WB (β = .31); however, the addition of FB-related SS made this relationship nonsignificant, FB-related SS did predict high levels of subjective WB (β = .23).
Online victimization										
Cole, Nick, Zelkowitz, Roeder, and Spinelli (2017)	United States	To evaluate if online and FTFSS are redundant; the effect of OSS vs. FTFSS on depressive thoughts and feelings and if SS moderates the effects of online victimization	Cross-sectional survey	231 American undergraduate students, 72% female, M_{age} = 19.28 (*SD* = 1.15)	PSSS, CES, OESA, SNS, DAS, CTI, BDI-II	89% of participants reported using an SNS, with FB being among the most popular. SNS includes an OSS factor.	Depressive thoughts and feelings; dysfunctional attitudes, low self-esteem, depressive cognitions, and depressive symptoms	Gender and OSS/FTFSS overlap	Least squares regression and SEM	OSS and FTFSS uniquely predicted better levels of depressive thoughts and feelings (*b* = .16, *b* = .41). High levels of OSS partially offset the effects of online victimization (β = −.07). OSS was strongest in persons with low FTFSS.
McConnell, Clifford, Korpak, Phillips, and Birkett (2017)	United States	To examine how FB effects victimization, outness, SS, and psychological distress in LGBTQ young adults	Cross-sectional survey	175 American LGBTQ young adults, M_{age} = 24.02 (*SD* = 1.65)	FB usage, SMUIS, OI, MSPSS, BSI, victimization, OSS behavior, and cyberbullying items	FUI and SMUIS, as well as OSB target FB behaviors	Psychological distress	Age, gender, and race	Multiple regressions	FB social integration, SS, and seeking OSS did not predict psychological distress, though offering OSS predicted higher levels of psychological distress (β = .24).

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Loneliness										
K. T. Lee, Noh, and Koo (2013)	South Korea	To test if loneliness has an effect on WB when mediated by SNS-based self-disclosure and SS	Cross-sectional survey	265 FB-using Korean undergraduate students, 53% female, M_{age} = 26.84 (*SD* = 7.70)	RUCLALS, and adapted items of self-disclosure, SS, and WB	SS items were worded to measure support from SNSs; in addition, all participants had to be regular FB users	WB	None	SEM	Loneliness negatively predicated WB ($\beta = -.24$), as well as positively predicted self-disclosure ($\beta = .26$), which improved SNS-based SS ($\beta = .43$), which improved WB ($\beta = .16$).
Seo, Kim, and Yang (2016)	South Korea	To explore how FB interactions and user response time influences FBBSS and loneliness	Cross-sectional study	285 South Korean university students, 39% female, M_{age} = 21.31 (*SD* = 2.19)	D-UNCFSSS, ISEL, RUCLALS	Number of FB friends, interactions, and average time taken to receive comments were taken from participants FB walls. D-UNCFSSS and ISEL were altered for FBBSS.	Loneliness	Interpersonal awareness	SEM	Overall, number of interactions and average comment time positively and negatively predicted, respectively, emotional/being support ($\beta = .50$; $\beta = -.24$) and confidant support ($\beta = .33$; $\beta = -.21$), which in turn reduced loneliness levels ($\beta = -.33$; $\beta = -.23$). This result was found to be greater in those with greater interpersonal awareness.
Facebook addiction										
Tang, Chen, Yang, Chung, and Lee (2016)	Taiwan	To assess how personality traits influence FBBSS and FB addiction	Cross-sectional survey	792 Taiwanese university students, 65% female	FAS, MMSMB5, OSSS, OCIIS	OSSS	FB addiction	Gender, grade, and school type	Hierarchical regressions	Informational support was found to be positively associated with FB addiction ($\beta = .46$), whereas social companionship was negatively associated with FB addiction ($\beta = -.48$).

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Well-being										
Chan (2018)	Hong Kong	To examine the relationships between various forms of CMC and FTFC, and friendship quality, and their effects on psychological well-being	Cross-sectional survey	925 Hong Kong-based participants, 52% female, Age range = 45–49 years	Psychological well-being items, SPANE, DAS-4, MOS-social support, and entrapment items	Number of FB friends, FB-based communication	Psychological WB and positive and negative emotions.	Age, education, income, gender, religion, marital status, and children	Hierarchical regressions	FB-based communication predicted greater SS in 18- to 34-year-olds ($\beta = .11$). FB friends predicted greater SS in the 18- to 34-year-olds ($\beta = .26$) and 35- to 54-year-olds ($\beta = .15$), but not in the 55 to 70+ group. SS predicted psychological WB only in the 35 to 54 group ($\beta = .15$) and did not predict positive or negative emotions. FB-based communication and FB friends predicted greater psychological WB in the 18- to 34-year-old group ($\beta = .16$, $\beta = .15$), and FB-based communication also predicted greater negative emotions in the 18- to 34-year-old group ($\beta = .24$).
Chen and Bello (2017)	United States	To evaluate if receiving and providing SS on FB reduces stress and improves life satisfaction	Cross-sectional survey	382 American undergraduate students, 52% female, $M_{age} = 20.17$ ($SD = 1.85$)	ISSB, PSS, RSES, and SWLS	A modified ISSB was used to measure both receiving and providing SS on FB	Life satisfaction	Self-esteem, providing social support (Model 1) and received SS (Model 2)	Moderated regression	Receiving SS did not affect stress or life satisfaction. Providing SS increased stress ($B = .23$) and reduced life satisfaction ($B = -.02$), with self-esteem moderating the relationship between providing SS and life satisfaction ($B = -.13$). Low self-esteem predicted greater life satisfaction for greater SS providing behaviours ($B = .15$), whereas high self-esteem did not.

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
Hu, Kim, Siwek, and Wilder (2017)	United States	To evaluate how FB and personality traits affect perceived SS, online and offline social relationship satisfaction, and psychological WB	Cross-sectional survey	405 American college students, 71% females, M_{age} = 19.8 (SD = 2.2)	FIS, SRSS, PSSS, SIAS, BFI, SWLS	FB intensity/usage was measured using a five-item scale.	Psychological WB	Personality differences (extraverts/introverts, neurotics/nonneurotics)	SEM	FB intensity/usage directly predicted greater levels of online SRS (β = .38), and SS (β = .11), and lower levels of offline SRS (β = −.13). FB intensity/usage also indirectly predicted greater levels of psychological WB and lower levels of social interaction anxiety via online and offline SRS and SS. SS predicted higher levels of psychological WB (β = .39).
Huang (2016)	Taiwan	To investigate the effects of self-disclosure in SS and online WB and if that affects the intention to continue to use social media	Cross-sectional survey	333 Taiwanese FB users, 52% female, 67% aged 20–30 years	Adapted measures of self-disclosure, emotional and information support, online WB, and continuance intension	All scales were modified to be relevant to the context of FB use.	Online social WB and social media continuance intention	None	SEM	Online self-disclosure directly predicted greater FB-related SS (β = .58), which directly predicted greater online social WB (β = .38), which in turn predicted greater levels of social media continuance intention (β = .62).
H. Kim (2014)	United States	To examine how FBBSS affects psychological WB	Cross-sectional survey	626 American undergraduate students, 62% female, M_{age} = 20 (SD = 1.96)	FIS, ISSB, SWLS, and a measure of interpersonal ties strength	ISSB was modified to distinguish between supportive behaviors FTF and via FB.	Life satisfaction	Gender and age	Multiple regressions	FB intensity (β = .27) and number of strong ties (β = .23) was found to significantly predict FBBSS. FBBSS did not predict life satisfaction, over and above FTFSS, and number of strong ties.

(*table continues*)

Table 1 (*continued*)

Author(s), published date	Country	Study objective	Study design	Sample	Measures	Facebook-based SS	Outcome	Controls	Analysis	Relevant results
J. Kim and Lee (2011)	United States	To review how subjective WB is influenced by self-presentation strategies on FB	Cross-sectional survey	391 American undergraduate students, 72% female, M_{age} = 19.57 (*SD* = 2.88)	ISEL, SHS, author-developed measures of positive and honest self-presentation	ISEL was adapted to reflect SS drawn from FB, and number of FB friends was also recorded.	Subjective WB	None	SEM.	Honest self-presentation on FB predicted greater levels of perceived SS (β = .25), which predicted greater subjective WB (β = .22). Positive self-presentation on FB did not directly predict perceived SS but did directly predict greater levels of WB (β = .12) and indirectly predict WB through perceived SS (β = .06). Number of friends was found to have a negative curvilinear relationship with SS (β = −.13).
Liu and Yu (2013)	Taiwan	To examine the relationships between FB use, SS, and psychological WB	Cross-sectional survey	330 Taiwanese college students, 63% female, age range = 18–23 years	FIS, ISEL, RSPWB	FB usage was measured using FIS, and ISEL was modified to include an OSS factor.	WB	None	SEM	FB usage predicted greater levels of OSS (β = .48), which predicted greater FTFSS (β = .42) and WB (β = .01). The relationship between OSS and WB was also mediated by FTFSS (β = .25)
Professional well-being Chung and Chen (2018)	Taiwan	To explore the relationship between exchanging FB BSS and teacher self-efficacy	Cross-sectional survey	584 Taiwanese teachers, 92% female, 34% have 11–15 years' experience	Measures of teacher self-efficacy, receiving and providing SS	A modified measure was used to measure both receiving and providing SS on FB.	Teacher self-esteem	Group membership and teaching experience	Hierarchical regressions	In the final model, providing FBBSS predicted greater teacher self-esteem (β = .33), whereas receiving SS did not.
Gray, Vitak, Easton, and Ellison (2013)	United States	To examine the role of FB in the social adjustment of first-year college students	Cross-sectional survey	338 college American students, 56% females, M_{age} = 19.6 (*SD* = 2.12)	SACQ, author-developed measures of bonding social capital, access to academic support services, number of FB friends, and FB collaboration behaviors	The number of college-based friends on FB and a nine-item measure that captures how likely students are to use FB to coordinate study activities (information/-tangible support).	Social adjustment to college, bonding social capital	Race and first generation to go to college	SEM	Number of college-based friends on FB was found to predict social adjustment to college (β = .16). FB collaboration behaviors did not predict social adjustment to college; however, it did predict bonding social capital (β = .13).

Note. SIPAQ = social influence on physical activity; FUI = facebook use items; MII = multiple identities items; SII = social integration items; GBI = general bridging items; MDD = major depressive disorder; CTI = cognitive triad inventory; OSB = online support behavior; PSS = perceived stress scale; EFA = exploratory factor analysis; GSPSS = Global Measure of Perceived Stress Scale.

Table 2
Quality Appraisal of Included Articles Using the Newcastle-Ottawa Scale Adapted for Cross-Sectional Studies (Herzog et al., 2013) and the Critical Appraisal Skills Program for Randomized Control Trials (CASP, 2017)

		Selection			Comparability		Outcome		
Author(s), published date	Study design	Representativeness of the sample	Sample size	Nonrespondents	Ascertainment of the exposure (2 marks)	Based on design and analysis (2 marks)	Assessment of outcome	Statistical test	Quality
Chan (2018)	Cross-sectional survey	+		+	++	++	+	+	Good
Chen and Bello (2017)	Cross-sectional survey	+			++		+	+	Satisfactory
Chung and Chen (2018)	Cross-sectional survey	+			+	++	+	+	Satisfactory
Cole et al. (2017)	Cross-sectional survey	+		+	++	++	+	+	Good
Frison and Eggermont (2015)	Cross-sectional survey	+			++	++	+	+	Good
Frison and Eggermont (2016)	Cross-sectional survey	+			++	++	+	+	Good
Gray et al. (2013)	Cross-sectional survey	+		+	++	++	+	+	Good
Hu et al. (2017)	Cross-sectional survey	+		+	++	+	+	+	Good
Huang (2016)	Cross-sectional survey	+			+		+	+	Unsatisfactory
Indian and Grieve (2014)	Cross-sectional survey	+			++	++	+	+	Good
Jang et al. (2016)	Cross-sectional survey	+			++		+	+	Satisfactory
H. Kim (2014)	Cross-sectional survey	+		+	++	++	+	+	Good
J. Kim and Lee (2011)	Cross-sectional survey	+		+	++		+	+	Satisfactory
K. T. Lee et al. (2013)	Cross-sectional survey	+			+		+	+	Unsatisfactory
Lima et al. (2017)	Cross-sectional surveys	+			+	++	+	+	Satisfactory
Liu and Yu (2013)	Cross-sectional survey	+		+	++	++	+	+	Good
McCloskey et al. (2015)	Cross-sectional survey	+	+		++		+	+	Satisfactory
McConnell et al. (2017)	Cross-sectional survey	+			++	++	+	+	Good
Nabi et al. (2013)	Cross-sectional survey	+			++	++	+	+	Good
Oh et al. (2013)	Cross-sectional survey	+			+		+	+	Unsatisfactory
Park et al. (2016)	Cross-sectional study	+			++	++	++	+	Good
Seo et al. (2016)	Cross-sectional study	+			++	+	++	+	Good
Tang et al. (2016)	Cross-sectional survey	+			+	++	+	+	Good
Wright (2012)	Cross-sectional survey	+			++		+	+	Satisfactory
Wright et al. (2013)	Cross-sectional survey	+			++	+	+	+	Satisfactory
Zhang (2017)	Cross-sectional survey	+		+	+	++	+	+	Good

		Trial results			Participant methods			Results					
Author(s), published date	Study design	Address the research question	Randomized assignment	Participants accounted for	Blind to allocation	Group size	Group treatment	Effect	Precision	Application of results	Outcomes considered	Worth	Quality
Cavallo et al. (2014)	Randomized control study	+	+	+			+	+			+	+	Fair

quality of life and positively related to depression. This result is inconsistent with the findings of more traditional face-to-face social support approaches. This may be due to increased desire to access online support when experiencing distress; however, the correlational nature of the analysis makes causal inferences difficult (McCloskey et al., 2015).

Zhang (2017) found that intent to self-disclose, and the amount and honesty of self-disclosure yielded greater acts of social support from friends on Facebook. Interestingly, greater depth of personal self-disclosure on Facebook can result in decreased perceptions of social support and negatively affect mental health (Zhang, 2017). This may feed into deceptive positive attention-seeking behaviors on Facebook and the need to editorialize negative disclosures online (Dumas, Maxwell-Smith, Davis, & Giulietti, 2017). Given that honest self-disclosure may not be advantageous online, this may lead to posts that only portray the user in a positive light. This "highlight reel" style of posting may result in poor social comparisons that can negatively affect mental health.

Mental Illness

Depression. Four studies that focused on the effects of Facebook social support on depression were identified (Frison & Eggermont, 2015, 2016; Park et al., 2016; Wright et al., 2013). Three of the studies that examined Facebook-based social support and depression found that social support drawn from Facebook was predictive of lower levels of depression, depressive mood, and symptomology (Frison & Eggermont, 2015; Park et al., 2016; Wright et al., 2013). The fourth study found that Facebook-based social support only predicted lower levels of depression in adolescent girls, not boys (Frison & Eggermont, 2016). In addition, private (i.e., messaging) and public (i.e., posting on one's wall) Facebook use was found to predict greater Facebook-based social support, which was associated with lowered depression in adolescent girls (Frison & Eggermont, 2016). In adolescent boys, it was found that active public Facebook use was associated with greater levels of depression, with Facebook-based social support not predicting depression (Frison & Eggermont, 2016). When adolescents encounter daily stress, it more likely that they will actively seek social support through Facebook, rather than via interpersonal interactions, to increase perceived social support and decrease depressive moods (Frison & Eggermont, 2015). It was also found that this social support–seeking behavior may increase depressive moods (Frison & Eggermont, 2015).

Perceptions of Facebook-based social support was found to negatively affect depression levels when participants disclosed negative feelings on Facebook (Park et al., 2016) and had greater face-to-face and computer-mediated communication competency (Wright et al., 2013). However, receiving actual socially supportive behaviors on Facebook (i.e., public expressions of support on posts) did not have an effect on depression levels (Park et al., 2016). This result is consistent with previous research by McDowell and Serovich (2007) showing that the perception of social support is more impactful than actual supportive behavior.

Anxiety. One study examined the effects of Facebook-based social support and social anxiety (Indian & Grieve, 2014). Indian and Grieve (2014) found, in a sample of high and low socially anxious individuals, psychological disposition to face-to-face or Facebook can play a role in how social support affects well-being. Within the high socially anxious group, Facebook-based social support significantly predicted greater psychological well-being, whereas face-to-face social support did not. Within the low socially anxious group, face-to-face social support significantly predicted greater psychological well-being; however Facebook-based social support had no significant relationship with psychological well-being. Although face-to-face social support was found to be important for persons who have little difficulties socially, for persons with high social anxiety, Facebook-based social support appeared to work in a compensatory manner when more typical social interaction is a barrier (Indian & Grieve, 2014).

Online victimization. Two studies focused on the effects of cyberbullying and victimization, while controlling for Facebook-based social support on psychological distress (Cole, Nick, Zelkowitz, Roeder, & Spinelli, 2017; McConnell, Clifford, Korpak, Phillips, & Birkett, 2017). The results showed that when accounting for reported online victimization, social support did not predict psychological distress; however offering support to other users was a predictor of greater psychological distress (McConnell et al., 2017). This result is may be due to the vicarious exposure to trauma associated with offering support to highly victimized peers (Fox & Ralston, 2016). Facebook-based social support was predictive of less depressive cognitions and partially offset the effects of online victimization for lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ) persons (Cole et al., 2017). It was also noted that Facebook-based social support is redundant in LGBTQ persons with strong face-to-face social support (Cole et al., 2017), further supporting that the notion Facebook can be used to compensate for poor inclination or opportunity to access social support in person.

Loneliness. Two studies focused on the effects of Facebook-based social support and loneliness (K. T. Lee, Noh, & Koo, 2013; Seo et al., 2016). Seo et al. (2016) examined the role Facebook-based social support can have on loneliness. The number of interactions on Facebook is predictive of the level of Facebook-based social support, suggesting that the more active a person is on Facebook, the greater the opportunities for support (Seo et al., 2016). The average time taken for friends to comment on a person's public post has a reported effect on the levels of social support perceived, though this finding was only found in individuals with a high level of interpersonal awareness (Seo et al., 2016). Generally, individuals with a greater sensitivity to interpersonal interactions drew greater support from Facebook to reduce loneliness. K. T. Lee et al. (2013) examined how loneliness can affect well-being when mediated by online self-disclosure and Facebook-based social support. Loneliness was predictive of greater self-disclosure, which increased levels of perceived Facebook-based social support, which improved well-being (K. T. Lee et al., 2013). This suggests that Facebook-based social support reduces loneliness and mediates the relationship between loneliness and well-being.

Facebook addiction. A single study focused on the role that social support can play on Facebook addiction in university students (Tang, Chen, Yang, Chung, & Lee, 2016). Online interpersonal relationships predicted high levels of Facebook addiction (i.e., the compulsive overuse of Facebook), whereas personality traits of neuroticism and conscientiousness predicted lower levels of Facebook addiction (Tang et al., 2016). Of the Facebook-based social support factors, informational support was found to positively predict higher levels of Facebook addiction in this sample,

with social companionship negatively predicting Facebook addiction. This suggests that not all of the factors of social support can be beneficial to Facebook users.

Well-being

Seven studies that focused on the effect of Facebook-based social support on psychological well-being were found (Chan, 2018; Chen & Bello, 2017; Hu, Kim, Siwek, & Wilder, 2017; Huang, 2016; H. Kim, 2014; J. Kim & Lee, 2011; Liu & Yu, 2013). Five of the seven studies found that greater Facebook-based social support was predictive of greater levels of well-being (Chan, 2018; Hu et al., 2017; Huang, 2016; J. Kim & Lee, 2011; Liu & Yu, 2013). It is worth noting that Chan (2018) found Facebook-based social support was only predictive of well-being in 35- to 54-year-olds. H. Kim (2014) found that Facebook-based social support did not predict life satisfaction over and above face-to-face social support. This is not unexpected, as the utility of Facebook-based social support over face-to-face social support is often contingent on circumstance and predisposition of a person to use Facebook to compensate for poor face-to-face social support (Cole et al., 2017; Indian & Grieve, 2014). Chen and Bello (2017) found that receiving social support on Facebook was not predictive of life satisfaction or stress, whereas providing support on Facebook predicted greater stress and reduced perceived life satisfaction. However, persons with low self-esteem found greater life satisfaction when providing social support on Facebook (Chen & Bello, 2017). There were a number of factors that influenced levels of Facebook-based social support in these studies: online self-disclosure (Huang, 2016), honest self-presentation (J. Kim & Lee, 2011), age (Chan, 2018), strong ties with Facebook friends (H. Kim, 2014), and Facebook intensity (Hu et al., 2017; H. Kim, 2014; Liu & Yu, 2013).

Two studies examined the effects of Facebook-based support on professional-based well-being outcomes (Chung & Chen, 2018; Gray, Vitak, Easton, & Ellison, 2013). The number of friends and perceptions of support found at university (bonding social capital) was found to have a positive effect on social adjustment to college, which helped predict increased persistence in college for first-year students (Gray et al., 2013). Collaborative Facebook behaviors were predictive of greater bonding social capital, suggesting that utilizing instrumental support via Facebook is also a factor in adjusting to college (Gray et al., 2013). In addition, it was found that providing social support via Facebook improved self-efficacy for creative teaching, above and beyond receiving social support (Chung & Chen, 2018). This suggests that providing support to peers via Facebook may provide an opportunity for vicarious support, which improves self-efficacy.

Discussion

Overall, the results generally demonstrated that higher levels of Facebook-based social support predicted greater positive mental and physical health outcomes, including physical activity (Cavallo et al., 2014), physical health (Nabi et al., 2013), life satisfaction and well-being (Chan, 2018; Hu et al., 2017; Huang, 2016; J. Kim & Lee, 2011; Liu & Yu, 2013), and college engagement (Gray et al., 2013). Higher levels of Facebook-based social support also predicted lower levels of a wide range of negative outcomes that were also measured, including depression (Frison & Eggermont, 2015, 2016), victimization (Cole et al., 2017; McConnell et al., 2017), and loneliness (K. T. Lee et al., 2013; Seo et al., 2016). There were some notable exceptions to these findings, for example, for persons with little to no social anxiety (Indian & Grieve, 2014) and adolescent boys (Frison & Eggermont, 2016).

There are a number of factors that appear to mediate the relationship between Facebook-based social support and health outcomes. Although self-disclosure on Facebook was generally found to improve perceptions of social support and mental health (Huang, 2016; Park et al., 2016), disclosing intimate feelings at a high rate had a detrimental effect on perceptions social support and on mental health (Zhang, 2017). This suggests that sharing high numbers of intentionally intimate posts is not beneficial when seeking social support. Private communication on Facebook, as opposed to public posting, appears to be of greater benefit to perceptions of social support and mental health, particularly for adolescent girls (Frison & Eggermont, 2016). This is likely due to the confidential nature when directly messaging via Facebook, as opposed to posting publicly on a persons' Newsfeed. Although adolescent boys do draw social support from public Facebook posts, this does not translate into improvements in mental health (Frison & Eggermont, 2016). This could be due to the lack of emotional expression that characterizes male online interactions, resulting in little beneficial effects to mental health (Kaare, Brandtzaeg, Heim, & Endestad, 2007). Greater sensitivity to interpersonal interactions was predictive of increased perceptions of social support from Facebook, showing that persons who are more attentive to interpersonal interactions will perceive greater support than those who are less attentive the expressions of others (Seo et al., 2016). Competency in communication was also found to predict better Facebook-based social support, which reduced depression, suggesting that teachable communication skills can be beneficial for online interactions and mental health (Wright et al., 2013). Honesty in interactions (J. Kim & Lee, 2011) and strong ties to friends on Facebook (H. Kim, 2014) were also predictive of greater social support, showing that quality of interactions and relationships online are important to improving perceptions of support.

Although eight of the 27 studies drew on a wide range of populations, including Taiwanese teachers, Belgian high school students, and North American LGBTQ young adults, there was an overreliance on college or university students in 70% of the total studies. However, this may be justifiable, given that university students are likely to be Facebook users; however, it does limit generalizability of findings of these studies to wider populations. In addition, all but two studies reported a larger proportion of female to male participants, which is not unexpected, as 52% of Facebook users are reported to be female (Statista, 2018a). An additional limitation found was the lack of diversity in the age range of the sample, with only 19% of studies reporting the mean age of participants being over 25 years old. This limitation suggests a need to evaluate Facebook-based social support in older populations. Most studies sampled American-based Facebook users (52%), suggesting a need to examine the utility of Facebook-based social support in more culturally diverse countries.

Most studies (88%) were found to be of satisfactory or good quality. The inclusion of the three studies that were found to be of unsatisfactory quality was justified, as the results of those studies did not differ from the main findings of this review. Finally, there was a lack of consistent measurement methodology of Facebook-based so-

cial support, or consistent measurement of outcomes, presenting a difficulty in applying consistent conclusions.

The Measurement of Facebook-Based Social Support

Facebook-based social support was not measured consistently across studies. Methods ranging from altered versions of established face-to-face social measures, for example, the Interpersonal Support Evaluation List used by Indian and Grieve (2014) and J. Kim and Lee (2011), to the number of Facebook friends and posts as a measure of social support, for example, Park et al. (2016). A number of studies also used the number of Facebook friends or Facebook usage to predict some of the variance within conventional measures of social support, which were then predictive of outcomes (Hu et al., 2017; Liu & Yu, 2013; Nabi et al., 2013). It is likely that current social support measures altered to capture Facebook-based social support may be best when capturing this construct (e.g., the Interpersonal Support Evaluation List). In addition, intensity of Facebook use appears to be best captured using the Facebook Intensity Scale, which is a self-report measure designed to measure Facebook use, number of friends, and the extent to which a person actively engages with Facebook (Ellison, Steinfield, & Lampe, 2007). This measure was used by a number of studies: for example, Hu et al. (2017), H. Kim (2014), and Liu and Yu (2013).

Number of Facebook Friends and Social Support

Although research into the use of Facebook has shown that the number of Facebook friends can predict greater levels of perceived social support, general well-being, and other positive outcomes, this effect can be reduced if an individual overextends their Facebook friend group (J. Kim & Lee, 2011). An increased number of "friends" on Facebook who are not close to the user can often lead to a dilution effect, resulting in less positive outcomes, such as lowered levels of perceived social support (Greitemeyer, Mügge, & Bollermann, 2014; J. Kim & Lee, 2011). This, in turn, has been found to result in poorer mental and physical health outcomes (Campisi et al., 2012; J. Kim & Lee, 2011). These results may suggest that the positive effects of social support can be negated by an overextension of a person's online social network.

Types of Social Support and Outcomes

Of the four conceptual types of social support (emotional, instrumental, informational, and appraisal support; House, 1981; Zhang, 2017), emotional support was most strongly associated with improved health outcomes (Cavallo et al., 2014; Oh et al., 2013; Seo et al., 2016; Wright, 2012). Emotional support drawn from Facebook was found to improve physical health behaviors (Cavallo et al., 2014; Oh et al., 2013) and lower levels of perceived stress (Wright, 2012) and loneliness (Seo et al., 2016). Informational support was predictive of high levels of Facebook addiction in university students, suggesting that motivation for Facebook use (i.e., recreational vs. informational reasons) may play a role in Facebook overuse (Tang et al., 2016). Instrumental support was associated with better adjustment to college, as collaborative behaviors are likely to facilitate relationship development in a new social environment. (Gray et al., 2013). Although health-related support seeking was associated with appraisal support, appraisal support did not predict any health-related outcome (Oh et al., 2013), suggesting feedback for self-evaluation may not play a role in the relationship between Facebook-based social support and health.

Six studies examined the utility of Facebook-based social support, over and above the effects of face-to-face social support. Three studies found that, when controlling for face-to-face social support, Facebook-based social support was predictive of better health outcomes (Frison & Eggermont, 2015; Liu & Yu, 2013; Wright et al., 2013). One study found that Facebook-based social support was not predictive of life satisfaction, over and above face-to-face social support, suggesting that long term, face-to-face relationships are better for improving a person's satisfaction with life (H. Kim, 2014). However, one study found that Facebook-based social support was strongest in persons with low levels of face-to-face social support (Cole et al., 2017), and one study found that, when compared to face-to-face social support, Facebook-based social support was only predictive of well-being in persons with high social anxiety (Indian & Grieve, 2014). This suggests that when a person is poorly disposed to or unable to draw social support from one method (i.e., face-to-face vs. online), they can compensate and utilize the other.

Implications

There are a number of implications that can be taken from this review. First, the overall results of this study run counter to the findings of Frost and Rickwood (2017), which found that Facebook use was predictive of poorer mental health outcomes. This is not unexpected, as this study focused specifically on the use of Facebook as a mechanism for social support, rather than general Facebook use. Although general Facebook use has been shown to negatively affect mental health (Frost & Rickwood, 2017), when used to seek and provide social support, Facebook is beneficial across a number of mental health outcomes. Facebook-based social support may need to be considered by mental health workers as an additional way to improve mental health outcomes. Second, there may be ways to use Facebook in a way that maximizes the benefits of this SNS, like using Facebook to almost exclusively interact with Facebook friends rather than scrolling through the Newsfeed. Finally, greater education around the positive use Facebook and how to effectively use SNSs for supportive social interactions is required. This is especially pertinent for adolescents and persons who are experiencing social anxiety (Frison & Eggermont, 2015; Indian & Grieve, 2014).

Limitations

This review has several limitations that need to be considered. The first is the lack of a meta-analysis conducted on the data gathered. The reason for this is the large variability in the operationalization and measurement of Facebook-based social support and health-related outcomes. This is a direction for further study. These differences in measurement would likely distort any combined analysis and obscure results (Higgins & Green, 2011). Finally, although the overall results showed that Facebook-based social support may be beneficial, there were several studies that did not, at least partially, support this finding (Lima et al., 2017; Tang et al., 2016). This would suggest that there are factors that

can directly affect the levels of social support an individual can draw from Facebook (e.g., number of friends of Facebook). These effects were likely partially obscured by the inconsistent measurement of Facebook-based social support and outcomes.

It is also worth noting that many of these studies do not consider the notion of Facebook overuse. There is evidence to suggest that a person can overuse or even become addicted to social media (Andreassen & Pallesen, 2014). An additional consideration is cyberbullying, which can negatively affect levels of online social support (McConnell et al., 2017). Levels of compulsive Facebook use or cyberbullying would directly impact the site as a medium for social support.

In conclusion, this systematic review aimed to provide an overview of the Facebook-based social support literature. The examination of 27 studies found that, although Facebook-based social support is generally beneficial to physical and mental health outcomes, there are several factors that influence this effect, including self-disclosure, communication competence, number of friends, and social comparison. Facebook-based social support can also be used to compensate for poor opportunities or lack of opportunities for face-to-face social support and may even be the preferred method of social support among younger users. When used optimally, Facebook can provide a virtually instantaneous method of accessing social support networks.

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Chapter 4: The Buffering Effects of Facebook-based Social Support on Health Across Metropolitan and Regional Australians

The second study aimed to quantify the effects that Facebook-based social support can have on health outcomes across two distinct samples of regional and metropolitan Australians. The results of the second study are present across two chapters, each exploring a model of social support (i.e., the buffering hypothesis and the direct effect hypothesis). This chapter aimed to address the second research question ('Does social support drawn from Facebook improve health for both regional and metropolitan Australians?') in the context of the buffering hypothesis. The buffering hypothesis, in the context of social support, states that high levels of social support will mediate the negative relationship between stress and health (Cohen & Wills, 1985; Li et al., 2015). As such, individuals with high levels of social support will be less effected by the negative effects of stress than individuals with low levels of social support (Cohen & Wills, 1985; Li et al., 2015; Taylor, 2011).

To this end, this study examines the role that Facebook-social support can play in buffering both metropolitan and regional Australians from the effects of stress. The study was quantitative in nature, to remain consistent with the sequential explanatory mixed-methods design discussed in Chapter 1 (Cresswell et al., 2003; Tashakkori & Teddlie, 2010). This sample used in this study was Australian Facebook users from both regional and metropolitan areas.

The study drew on several findings and recommendations from the systematic literature review: this study utilised the modified version of the Interpersonal Support Evaluation List–Short Form (ISEL-SF) provided in Indian and Grieve (2014). Additionally, this study included the control variable of number of Facebook Friends. Finally, this study drew on measures of physical illness, mental health, and life satisfaction, as the findings of

the systematic review suggested that Facebook-based social support can affect all of these health outcomes.

For all material related to this study, including measures, please see Appendix B. The study is presented in the format requested by the journal (excluding title page) and is unaltered from the submitted version.

Abstract

Facebook has become an important part in building and maintain relationships. Using Facebook to connect with friends and family can provide greater perceptions of social support, providing a buffer between life stress and physical and mental health outcomes. It has been hypothesised that geographically-diverse communities may use Facebook to compensate for limited opportunities to access face-to-face social support. This study examines the role of Facebook-based social support on physical and mental health concerns (mental distress, dissatisfaction with life, and physical illness) across two samples of Australians Facebook users (209 living in metropolitan areas, 158 living regionally). Greater levels of Facebook-based social support predicted lower levels of health concerns in a metropolitan-based sample. No association between Facebook-based social support and health concerns was found in the regional sample. This result shows that the use of Facebook as a mechanism for social support, and its effects on health, vary across geographical locations, and appears to be mainly found in a metropolitan population.

Keywords: Facebook, social support, mental health, regional health, social media.

The Effects of Facebook-based Social Support on Health Across Metropolitan and Regional Australians

Introduction

Facebook, as a social networking site, is immensely popular, with more than 2.60 billion regular users worldwide, with more than half of Europe, and nearly 70% of Americans reporting to regularly use Facebook (Facebook, 2020). Facebook is the most popular and frequently used social networking site in Australia, with approximately 65% of Australians having a Facebook account (Crowling, 2016; Sensis, 2017; Statistica, 2020). Facebook utilises both public and private methods of online social interactions, including publicly posting photos, text, and videos, and privately messaging friends and family (Nadkarni & Hofmann, 2012; Oh et al., 2013). Research has already shown that perceptions of social support from interactions on Facebook can be beneficial to health (Gilmour et al., 2019; Kim & Lee, 2011; Nabi et al., 2013). Recent work examining the use of social media as a mechanism for social support has found that Facebook can improve perceptions of social support, which can then reduce mental distress and physical illness (Gilmour et al., 2019). However, the location of the user (i.e., living in a major city vs. living in a regional area), and the effect this can have on Facebook as a mechanism for social support have yet to be examined. Thus, this research investigates the use of Facebook to enhance perceived social support across metropolitan and regional communities, and the potential positive effects on physical and mental health that this type of support may provide.

Literature Review

According to the Australian Institute of Health and Welfare, the physical and mental health outcomes for Australians living in regional areas (i.e., located away from major cities and close to moderate population centres) has been shown to be significantly worse than persons who live in a metropolitan area (AIHW, 2016, 2019b; Bourke et al., 2012; Kelly et

al., 2010). Mental health issues such as anxiety and depression for those who live in regional areas occurs at much higher rates than those in major Australian cities (AIHW, 2016, 2019b). Additionally, physical health outcomes are similarly worse for Australians living regionally, including increased risks for alcohol and drug abuse, and decreased positive health activities (AIHW, 2016, 2019b). The lack of access to facilities, the increased stress of poor economic opportunities, the stigma around mental health, and social isolation are all major factors in poorer health outcomes for regional Australians (Alston, 2012; Fraser et al., 2002; Wrigley et al., 2005).

Social Support

A predictor in better physical and mental health outcomes has consistently been shown to be social support (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013). Social support is the extent to which a person feels there is a social network available for them to draw on for emotional and practical support (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013). Research has demonstrated people with greater perceived social support will experience fewer mental health issues and better physical health than those with less perceived social support (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013). Increased social support has been found to predict lower levels of physical illness and mental distress, as well as higher levels of life satisfaction (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013; Nabi et al., 2013).

Social support also mediates the negative effect that stress has on physical and mental health (Cohen & Wills, 1985; Li et al., 2015). Stress (i.e., the feeling of mental strain or pressure) can be caused by both internal and external factors, such as negative self-perception, or job loss (Sapolsky, 1994; Zhang, 2017). The level of social support an individual perceives they can draw on, rather than the actual social support they receive, often buffers the individual from the negative effects of stress with this effect known as the

buffering hypothesis (Cohen & Wills, 1985; Zhang, 2017). The mechanism behind this buffering effect is known as stress and coping theory, which posits life events are stressful only to the extent that an individual appraises the severity of, and their inability to cope with, the event (Cohen & Wills, 1985; Thoits, 1986; Zhang, 2017). Specifically, an individual with greater perceived social support feels they have greater practical and emotional interpersonal resources to draw on to both resolve the source of the stress, and to gain emotional support while under that source of stress (Wallston et al., 1983; Zhang, 2017).

Facebook and Social Support

One of the potential barriers to accessing face-to-face social support from relevant or like-minded groups and individuals in regional communities is the relative distance between individuals and population centres (Koopman et al., 2001; Lauckner & Hutchinson, 2016; Vyavaharkar et al., 2010). This distance can lead to social isolation and loneliness, which, in turn, can affect mental health (Alston, 2012; Kawachi & Berkman, 2001). However, with the introduction of contemporary, internet-based communications, such as social media, it is likely that new methods of drawing on social support have been incorporated into many regional communities.

Social support drawn from Facebook has been associated with improved physical and mental health, and greater life satisfaction and well-being (Gilmour et al., 2019; Kim & Lee, 2011; Nabi et al., 2013). Facebook use, including time spent on Facebook and number of Facebook Friends are associated with greater perceptions of Facebook-based social support (Gilmour et al., 2019; Kim & Lee, 2011; Nabi et al., 2013), although overuse of Facebook can have negative health outcomes (Frost & Rickwood, 2017). Studies have found that Facebook-based social support can predict lower levels of perceived stress, physical illness, and mental health (Kim & Lee, 2011; Nabi et al., 2013), with evidence suggesting social support drawn from Facebook can be used to supplement reduced social inclinations or

opportunities to access face-to-face social support (Indian & Grieve, 2014). Thus researchers have suggested that persons living in more geographically-isolated areas could potentially utilise Facebook to access online social support, and thus improve mental health (Indian & Grieve, 2014). However, most of the studies examining Facebook-based social support only draw from metropolitan or student samples (Gilmour et al., 2019). An absence of studies drawn from regional samples has previously been noted, and no studies to date have compared the effects of Facebook-based social support on health outcomes in metropolitan and regional users (Indian & Grieve, 2014).

The Current Study

This study explores the research question "is there a difference in the effects of social support drawn from Facebook on physical and mental health outcomes for metropolitan and regional Australians?" Therefore, overall, this study aims to evaluate the buffer hypothesis as it relates to the effects of Facebook-based social support on health outcomes, such as mental distress, dissatisfaction with life, and physical illness, for persons living in metropolitan and regional areas of Australia.

Drawing from the reviewed literature several hypotheses were developed. Firstly, it is hypothesised that time spent on Facebook and number of Facebook Friends will be positively related to Facebook-based social support (**H1**). Additionally, it is hypothesised that perceived life stress, and time spent on Facebook will have a positive relationship with physical and mental health concerns (**H2a** and **H2b**, respectively). To incorporate the buffering hypothesis, it is hypothesised that Facebook-based social support will mediate the relationship between perceived life stress, and physical and mental health concerns (**H3**). Finally, it has been suggested in previous research that persons living in geographically-isolated areas may use Facebook to supplement for reduced opportunities to access face-to-face social support (Indian & Grieve, 2014). As such, it is also hypothesised that the effect of

Facebook-based social support on physical and mental health concerns will be strongest in the regional sample, when compared to the metropolitan sample (**H4**).

Methods

Participants and Procedure

Participants were recruited via an online survey, between August 2018 and March 2019. Recruitment methods of members of the general public was performed via acquaintance networks, social media advertising (i.e., Facebook, LinkedIn, and Twitter), and in-person at public events in regional communities. In addition, an undergraduate Psychology student pool at a regional Australian university was utilised. Participants were offered either entry in a cash prize draw (i.e., $50 gift voucher) or course credit following the completion of the survey. Participants had to be current Facebook users, reside in Australia, and be over 18 years of age. Three hundred and seventy-four participants were initially recruited; however, seven participants were removed for incomplete or implausible responses, leaving a total sample of 367 participants.

Measures

Demographics

To categorise location (i.e., metropolitan or regional community), participants provided their postcode as well as distance from their residence to the nearest population center. This enabled categorisation as either metropolitan or regional residence based on the Australian Statistical Geography Standard (ASGS) Remoteness Areas criteria (ABS, 2016; AIHW, 2004). Demographic information, including age and gender were also collected (see Table 4. 1. for sample descriptive statistics).

Table 4. 1.

Demographic Information of the Regional (n=158) and Metropolitan (n=209) Samples.

	Metropolitan (n=209)	*Regional (n=158)*
Age	36.28 (*SD*=12.62)	36.32 (*SD*=13.40)
Gender		
Male	52 (24.9%)	30 (19.0%)
Female	157 (75.1%)	128 (81.0%)
Hours spent on Facebook (per day)	1.50 (*SD*=1.57)	1.65 (*SD*=163)
No. of Facebook Friends	310.00 (*SD*=293.02)	384.14 (*SD*=464.95)
Device most used to engage Facebook		
Mobile Device	174 (83.3%)	125 (79.1%)
Personal Computer	18 (8.6%)	20 (12.7%)
Tablet	16 (7.7%)	12 (7.6%)
Computer at School/Work	1 (0.4%)	1 (0.6%)
Level of Employment		
Full-time	106 (50.7%)	55 (34.8%)
Part-time	27 (12.9%)	36 (22.8%)
Casual	23 (11.0%)	29 (18.4%)
Student	44 (21.1%)	27 (17.1%)
Not employed	9 (4.3%)	11 (7.0%)

Facebook Use

Facebook use was measured as self-reported time spent on Facebook per day (recorded as minutes and hours) and number of Facebook Friends on the participants' account. Due to extreme non-normality, number of Facebook Friends was transformed logarithmically.

Facebook-based Social Support

A modified version of the Interpersonal Support Evaluation List–Short Form (ISEL-SF), informed by the design utilised in Indian and Grieve (2014), was used to measure Facebook-based social support. Participants responded to items using a 4-point Likert scale (0 = "*definitely false*" to 3 = "*definitely true*"). An example item was: '*When I need suggestions on how to deal with a personal problem, I know someone on Facebook I can turn to'*. The modified ISEL-SF showed excellent internal consistency in this sample (α = .90), and has been used in previous studies that examine Facebook-based social support (Indian & Grieve, 2014; Kim & Lee, 2011).

Perceived Life Stress

Perceived life stress was measured by the 10-item Perceived Stress Scale (PSS; (Cohen et al., 1983) which assesses an individual's perception of the stability of their life, as well as their ability to deal with stressful situations (Cohen et al., 1983; Hewitt et al., 1992). Participants were asked to rate how often they have thought or felt a certain way, such as "*In the last month, how often have you felt that you were unable to control the important things in your life?*", on a 5-point Likert scale (0 = *"never"* to 4 = *"very often"*). The PSS showed good internal consistency (α = .89), and has been used in previous studies exploring Facebook-based social support as a measure of global perceived stress (Wright, 2012; Wright et al., 2013)

Mental Distress

Mental distress was measured using the Depression Anxiety Stress Scale-21 (DASS-21). The DASS-21 is a 21-item self-report questionnaire used to measure an individual's levels of depression, anxiety, and stress (Osman et al., 2012). The DASS-21 requires participants to rate how much each item relates to them in the previous week (e.g., "*I felt down-hearted and blue"*), using a 4-point Likert scale, ranging from 0 ("*never")* to 3

("*almost always"*). The DASS-21 showed excellent internal consistency in this sample (α = .95). The DASS-21 has shown strong construct and discriminant validity in previous studies (Henry & Crawford, 2005; Osman et al., 2012)

Dissatisfaction with Life

Dissatisfaction with life was assessed by the Satisfaction with Life Scale (SWLS). The SWLS is a 5-item self-report questionnaire used to globally measure the extent to which a person experiences contentment with their current life circumstances (Diener et al., 1985). An individual rates the extent to which they agree with statements, such as "*In most ways, my life is close to my ideal*", on a 7-point Likert scale (1 = "*strongly disagree*" to 7 = "*strongly agree*"). The SWLS showed good-to-excellent internal consistency (α =.89) in this sample, and has shown strong convergent and divergent validity (Diener et al., 1985; Pavot & Diener, 1993, 2008).

Physical Illness

Physical illness was measured using the Physical Illness Measure (PIM). The PIM is a five-item scale that assesses how often an individual experiences physical illness sensations and symptoms (Jackson et al., 2002). Participants were asked to rate how often they are bothered by general health issues (e.g., *"Cold"*) ranging from 1 *"Not bothered"* to 4 *"Greatly bothered"*. The PIM has shown adequate internal consistency in this sample (α = .78).

Data Analysis

Descriptive statistics were generated for the continuous variables (life satisfaction, physical illness, mental distress, Facebook-based social support, time spent on Facebook, number of Facebook Friends, and age), and categorical variables (gender). Correlations between the variables were also examined. A structural equation model (SEM) was used to examine the first three hypotheses (**H1**, **H2a**, **H2b**, and **H3**). The model consisted of 6

observed variables: stress, time spent on Facebook, number of Facebook Friends, Facebook-based social support, with age and gender being included as controls. Physical and mental health concerns was expressed as a latent variable, with 3 observed variables: mental distress, physical illness, and dissatisfaction with life. To test model fit χ^2, comparative fit index (CFI), Tucker-Lewis index (TLI), and root-mean square error of approximation (RMSEA) were used (Kline, 2011). Acceptable fit to the data was indicated by CFI and TLI values of $\geq .90$, with values of $\geq .95$ indicating excellent fit. Additionally, RMSEA values of $\geq .06$ but $\leq .08$ indicated acceptable fit, with values of $<.06$ indicating excellent fit (Kline, 2011). To test the fourth hypothesis (**H4)**, a multigroup analysis of the model was also conducted to test if the effects of Facebook-based social support was consistent across both groups (metropolitan and regional Facebook users).

Results

Data screening was conducted in IBM SPSS version 24. The structural equation models (SEMs) were designed and tested in IBM SPSS AMOS version 24. Modification indices showed that age negatively co-varied with perceived life stress and number of Facebook friends. See Table 2 for variable correlations.

Table 4. 2.

Correlations, Means, and Standard Deviations of the Variables in the Structural Equation Model (N = 367)

	1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*
1. Gender	-									
2. Age	-.03	-								
3. Perceived Stress	-.01	-.26	-							
4. Number of Facebook Friends	.13*	-.41	.07	-						
5. Time Spent on Facebook (Hours)	-.01	-.13*	.14**	.15**	-					
6. Facebook-based Social Support	.10	-.12*	-.25	.35**	.13*	-				
7. Health (Composite)	-.05	-.20	.79***	.03	.18**	-.25	-			
8. Physical Illness	.14**	-.15**	.47***	.04	.12*	-.13*	.69***	-		
9. Mental Distress	-.11*	-.20	.75***	.06	.17**	-.21	.91***	.47***	-	
10. Dissatisfaction with Life	-.06	-.10	.59***	-.06	.13*	-.25	.73***	.34***	.49***	-
M	-	36.30	28.43	341.92	1.56	32.83	64.00	15.71	37.18	11.12
SD	-	12.95	7.00	377.99	1.60	7.91	20.48	5.99	12.43	6.87

Note: *p<.05, **p<.01, ***p<.001.

The resulting model (see Figure 1) showed an acceptable-to-strong fit to the data: $\chi^2(23) = 61.58$, CFI = .95, TLI = .92, RMSEA = .068. As predicted, the number of Facebook Friends was positively associated with Facebook-based social support (β = .30, p <.001), however, time spent on Facebook was not significantly associated with Facebook-based social support (β = .09, p =.05), resulting in partial support for **H1**. Additionally, increased perceived life stress and time spent on Facebook were both significantly associated with greater physical and mental health concerns (β = .90, p <.001; β = .09, p =.015, respectively), providing support for **H2a** and **H2b**. Finally, increased Facebook-based social support was found to reduce levels of physical and mental health concerns (β = -.08, p =.050), and mediate the indirect relationship between perceived life stress, and physical and mental health concerns (β = .02, p =.040). This finding supports the hypothesis that Facebook-based social support can reduce the effect of perceived life stress on physical and mental health concerns (**H3**). Age and gender were not significantly associated with physical and mental health concerns (β = .01, p =.92; β = .06, p =.09, respectively).

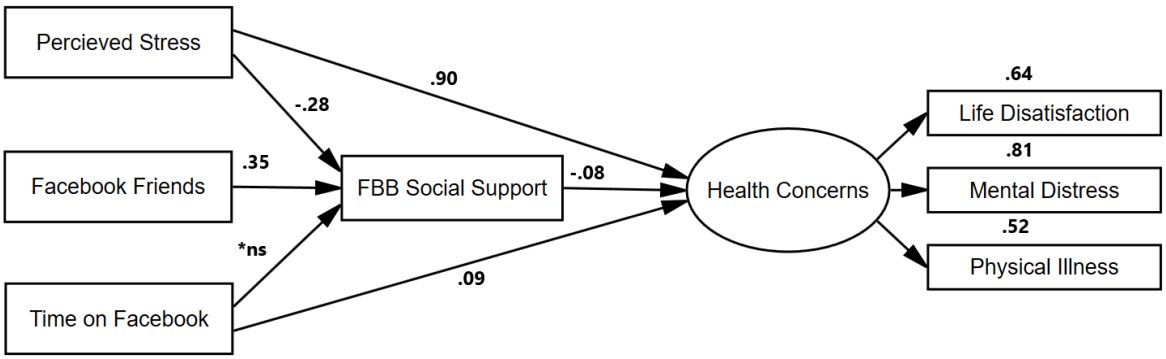

Figure 4.1. The effect of Facebook-based social support on physical and mental health concerns.

Note: *ns = non-significant, FBB = Facebook-based. For ease of interpretation control variables, error terms, and covariances are not shown.

The Role of Location on Facebook-based Social Support.

To test the role of location on Facebook-based social support, a multi-group analysis was also conducted, with location of the user (metropolitan and regional users) as the

grouping variable. The model showed strong fit to the data: $\chi^2(46) = 77.36.58$, CFI = .96, TLI = .94, RMSEA = .043. Additionally, the unconstrained model significantly differed from the constrained model (p = .036), suggesting that the location of the user was a significant mediator of the hypothesised model. Within the metropolitan sample (Fig. 2), greater levels of Facebook-based social support was associated with lower levels of physical and mental health concerns (β = -.13, p =.016). Interestingly, time spent on Facebook was not significantly associated with either Facebook-based social support, or physical and mental health concerns (β = .07, p =.25; β = .01, p =.83, respectively). Additionally, Facebook-based social support did mediate the effects of increased perceived life stress on physical and mental health concerns (β = .03, p =.010).

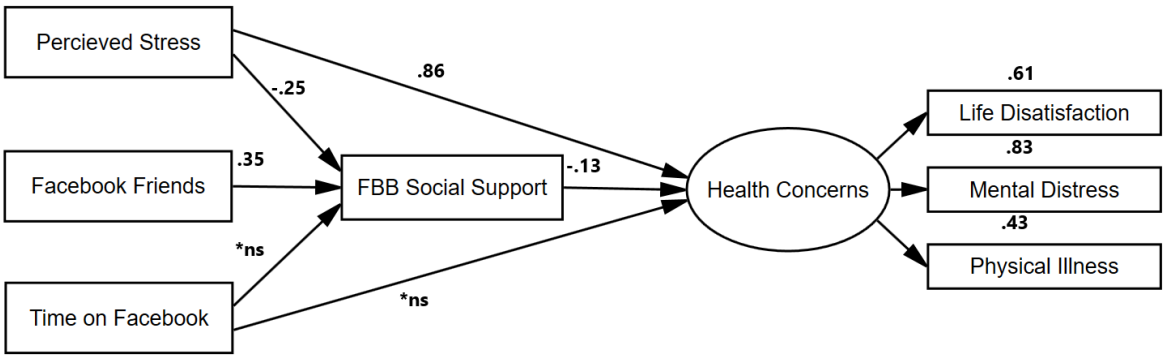

Figure 4. 2. The effect of Facebook-based social support on physical and mental health concerns in the metropolitan sample.

Note: *ns = non-significant, FBB = Facebook-based. For ease of interpretation control variables, error terms, and covariances are not shown.

Within the regional sample (Figure 3), Facebook-based social support was not associated with physical and mental health concerns (β = -.02, p =.69), showing that Facebook-based social support does not mediate the relationship between perceived life stress, and physical and mental health concerns. This result does not support the hypothesis that the effect of Facebook-based social support on physical and mental health concerns would be strongest for the regional sample (**H4**). Interestingly, more time spent on Facebook

was associated with greater physical and mental health concerns in the regional sample only (β = .18, p <.001), with the same effect being non-significant in the metropolitan sample.

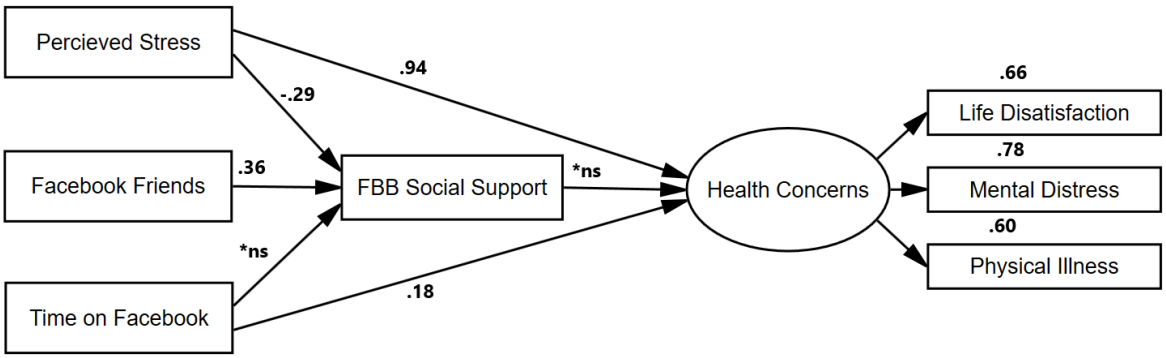

Figure 4. 3. The effect of Facebook-based social support on physical and mental health concerns in the regional sample.

Note: **ns* = non-significant, FBB = Facebook-based. For ease of interpretation control variables, error terms, and covariances are not shown.

Discussion

This study aimed to explore the effects of Facebook-based social support on physical and mental health concerns across metropolitan and regional samples. Overall, there was partial support for the hypotheses proposed by this study. **H1** was partially supported: greater numbers of Facebook Friends were associated with greater levels of Facebook-based social support, which was consistent with previous studies (Gilmour et al., 2019; Kim & Lee, 2011; Nabi et al., 2013). However, time spent on Facebook was not associated with Facebook-based social support, suggesting that the quality of social interactions could be of greater utility rather than the total time spent on Facebook (Gilmour et al., 2019). Greater perceived life stress was associated with greater physical and mental health concerns (**H2a**), which was consistent with previous studies examining stress and health (Cohen & Wills, 1985; Thoits, 1986; Zhang, 2017). Interestingly greater time spent on Facebook, previously associated with poorer health outcomes (Frost & Rickwood, 2017), was only significantly associated with greater physical and mental health concerns in the regional sample (**H2b**). Within the total sample, increased Facebook-based social support did mediate the relationship between increased life stress and greater physical and mental health concerns (**H3**). However, while Facebook-based social support in the metropolitan sample was significantly associated with lower levels of physical and mental health concerns, within the regional sample this relationship was not supported.

The overall findings of this study showed that in the regional sample, Facebook-based social support did not affect physical and mental health concerns. This result does not support the buffering hypothesis of social support and runs counter to the fourth hypothesis (**H4**). There are several possible explanations for this finding. Firstly, Facebook-based social support has been found to be largely redundant in persons with high levels of face-to-face social support (Cole et al., 2017), and can be utilised when opportunities for face-to-face

interactions are reduced (Indian & Grieve, 2014). Thus, contrary to previous literature, it may be that individuals who live in regional communities may have sufficient face-to-face support and require less Facebook-based support. This would result in individuals from regional communities not requiring Facebook-based social support to buffer them from stress. Additionally, it may be that regional Facebook user have different motivations for using Facebook, beyond the need to belong and maintain relationships (Nadkarni & Hofmann, 2012). The regional sample also reported lower levels of Facebook-based social support when compared to the metropolitan sample.

Interestingly, the regional sample reported significantly higher numbers of Facebook Friends, previously found to have a negative impact on physical and mental health when online social networks are large and complex (Campisi et al., 2012; Campisi et al., 2017; Gilmour et al., 2019; Kim & Lee, 2011). Additionally, access to both mobile and fixed internet services in regional Australian areas can be more problematic than in metropolitan areas (Park, 2017), possibly contributing to making Facebook-based social support difficult or challenging for regional Facebook users. This result also suggests Facebook-based social support may only have a positive effect on health outcomes within metropolitan communities, as previous studies that examine the effects of Facebook-based social support on health have mostly drawn entirely on undergraduate or metropolitan-based samples (Gilmour et al., 2019).

Increased time spent on Facebook was associated with greater levels of health concerns in the regional sample. Accessing internet-based activities, like Facebook, have been found to promote sedentary behaviour, resulting in reduced physical health activities, like exercise, and has been associated with greater levels of depression (Barkley & Lepp, 2016; Frost & Rickwood, 2017). As individuals living in regional areas are less likely to

engage in positive health activities (AIHW, 2016, 2019b), the time spent on Facebook could impact the likelihood of individuals engaging in positive health activities.

Limitations and Future Research

There are a few limitations to this study. First, this study is cross-sectional, making causal inferences difficult, however the use of cross-sectional research has been noted as a method for testing complex theoretical models outside of an experimental context (Sedgwick, 2014). Second, it has been found that strong and weak social ties on Facebook, as well as communication competence, can affect Facebook-based social support and health outcomes (Kim, 2014; Wright et al., 2013). This study did not control for how strong/weak interpersonal ties and communication competence can affect Facebook-based social support. Reviewing the strength of social ties on Facebook, across metropolitan and regional samples, could demonstrate a difference in the structure of a person's Facebook network, and could present a path for future research An additional limitation to note is the overrepresentation of female participants in this sample. It has generally been noted that males and females use Facebook at similar rates (Statistica, 2019, 2020), as such, the uneven gender split in this study may present an issue for generalisability of the results. Additionally, as there is a disparity in internet access and speed across Australian communities (Park, 2017) this may have played a role in using Facebook as a mechanism for social support, which could have presented a control needed for this study. However, given that regional-based participants reported greater numbers of Facebook Friends and time spent on Facebook, it is possible that this disparity in internet access may not have impacted this study. Finally, while the metropolitan and regional samples were separated using the ASGS Remoteness Areas criteria (ABS, 2016; AIHW, 2004), it may be worth a future investigation into the use of Facebook-based social support for Australians living in extremely remote conditions. Approximately 3% of Australians live in remote or extremely remote communities, with limited

opportunities to engage with social support outside of their local communities, as such, Facebook may be used to increase such individuals'' social networks.

Conclusion

This study aimed to examine the effects of Facebook-based social support on physical and mental health concerns, such as mental distress, dissatisfaction with life, and physical illness, across regional and metropolitan samples. Facebook-based social support was associated with lower levels of physical and mental health concerns in the metropolitan sample. However, within the regional sample, Facebook-based social support did not buffer individuals from increased perceived life stress, and greater time spent on Facebook was associated with greater physical and mental health concerns. Overall, this study showed that the effects of social support drawn from Facebook on health could be location-specific.

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Chapter 5: The Effects of Social Support, Facebook, and Cyberbullying on Health in Metropolitan and Regional Australians

This chapter aimed to address the second research question ('Does social support drawn from Facebook improve health for both regional and metropolitan Australians?') in the context of the direct effect hypothesis. The direct effect hypothesis of social support states that the positive effects of social support on health can occur without the need for life stress (Cohen & Wills, 1985; Taylor, 2011). Even when absent high levels of stress, individual with high levels of social support can experience more positive health outcomes than individuals with low social support (Cohen & Wills, 1985; Taylor, 2011).

As such, this study aimed to explore the direct effect of Facebook-based social support on health outcomes like physical illnesses, mental distress, and life satisfaction. As this study drew on the same survey data as the preceding study, this study drew on the findings of the systematic literature review. This study included measures of face-to-face social and cyberbullying, in addition to Facebook-based social support. Additionally, this study also utilised the Facebook Intensity Scale (FIS) to measure Facebook use (Ellison et al., 2007).

For all material related to this study, including measures, please see Appendix B. The study is presented in the format requested by the journal (excluding title page) and is unaltered from the submitted version.

Abstract

Facebook has become a fixture in modern socialising and has been shown to provide feelings of social support than can improve health outcomes. However, a number of limitations within this area of research have been noted, with studies on Facebook-based social support generally not exploring the role that negative online social interactions (i.e., cyberbullying) can have perceptions of online support. Previous research into Facebook-based social support has hypothesised that geographically-diverse communities may use Facebook to compensate for poor opportunities to access face-to-face social support. This study examines the roles of social support (both Facebook-based and face-to-face), and Facebook-based cyberbullying on health outcomes (mental distress, life satisfaction, and physical illness) across two samples of metropolitan and regional Australians (205 living in metropolitan areas, 156 living in regional). It was found that Facebook-based social support only predicted lower levels of mental distress in the metropolitan sample. Cyberbullying predicted greater mental distress in both the regional and metropolitan samples, but only lower levels of life satisfaction in the metropolitan sample. This study shows that the effects of cyberbullying and Facebook as a mechanism for social support on health do vary across geographical locations and it appears that the impacts are primarily measurable in a metropolitan population.

Keywords: Facebook, social support, cyberbullying, mental health, regional health.

Public Policy Relevance Statement: Social support drawn from Facebook has been found to have a positive effect on health, however, this effect may depend on the location of the user. Facebook-based social support was found to lower levels of mental distress in Australian metropolitan users only, with Facebook-based social support having no effect on health for Australians living in regional areas.

The Effects of Social Support, Facebook, and Cyberbullying on Health in Metropolitan and Regional Australians

The physical and mental health outcomes for Australians living in regional (i.e., located away from major cities and close to moderate population centres) areas has been shown to be significantly worse than persons who live in a metropolitan (i.e., in or very near to a major Australian city) area (AIHW, 2016; Bourke et al., 2012; Kelly et al., 2010). Mental health issues such as anxiety and depression for those who live outside major metropolitan areas are occurring at much higher rates than those in the city (AIHW, 2016; Kelly et al., 2010). Additionally, physical health outcomes are similarly worse for Australians living regionally, including increased alcohol and drug abuse, and decreased positive health activities (AIHW, 2016). The lack of access to facilities, the increased stress of poor economic opportunities, stigma around mental health, and social isolation are all major factors in poorer health outcomes for regional Australians (Alston, 2012; Fraser et al., 2002; Wrigley et al., 2005). Recent work into the use of social media as a mechanism for social support has found that Facebook can improve perceptions of social support, which can improve health outcomes (Gilmour et al., 2019). As such, this study is an investigation into the use of Facebook to enhance social support across metropolitan and regional communities, and the potential positive effects on physical and mental health that this type of support may provide. An additional focus is the effects that intentionally negative social interactions on Facebook (i.e. cyberbullying) can have on health outcomes.

Social Support

A major predictor in better mental and physical health outcomes is social support (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013). Social support is the extent to which a person feels that there is a social network for them to draw on emotional and practical support. Research has demonstrated that people with greater perceived social

support will experience fewer mental health issues and better physical health than those with less perceived social support (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013). Increased social support has been found to predict lower levels of physical illness and mental distress, as well as predict higher levels of life satisfaction (Campbell et al., 2011; Cohen & Wills, 1985; Luszczynska et al., 2013; Nabi et al., 2013).

One of the potential barriers to accessing face-to-face social support from relevant/ like-minded groups and individuals in regional communities is the relative distance between individuals and population centres (Koopman et al., 2001). This can lead to feelings of social isolation and loneliness, which can, in turn, affect mental health (Alston, 2012). However, with the introduction of more modern, internet-based communication, it is likely that new methods of drawing social support have been incorporated into many regional communities, including social media.

Facebook-based Social Support

Facebook, as a social networking site, is immensely popular, with more than half of Europe, and nearly 70% of Americans reporting to regularly use Facebook (Facebook, 2020; Statistica, 2020). Facebook is currently used by more than 2.60 billion regular users worldwide (Facebook, 2020). Facebook is the most popular and frequently used social networking site in Australia, with approximately 65% of the population having a Facebook account (Crowling, 2016; Sensis, 2017; Statistica, 2020). Facebook utilises both public and private methods of online social interactions, including publicly posting photos, text, and videos, and privately messaging friends and family (Nadkarni & Hofmann, 2012; Oh, Lauckner, Boehmer, Fewins-Bliss, & Li, 2013). It has been found that perceptions of social support from interactions on Facebook can be beneficial to health (Gilmour et al., 2019; Kim & Lee, 2011; Nabi et al., 2013).

Social support drawn from Facebook has been associated with improved mental and physical health, and greater life satisfaction and well-being (Gilmour et al., 2019). Studies have found that Facebook-based social support can predict lower levels of perceived stress, physical illness, and mental health (Kim & Lee, 2011; Nabi et al., 2013). Furthermore, Facebook-based social support has been found to be predictive of better health outcomes, over and above the effect of face-to-face social support (Frison & Eggermont, 2015; Liu & Yu, 2013; Wright et al., 2013). There is also evidence to suggest that social support drawn from Facebook can be used to supplement poor inclinations or opportunities to access face-to-face social support (Indian & Grieve, 2014).

While many studies have found that Facebook-based social support can be beneficial, most do not take into consideration the effects that negative interactions on social networking sites can play on health, and specifically, mental distress (Gilmour et al., 2019). Cyberbullying, that is bullying that occurs via electronic mediums such as online gaming, instant messaging services, or social networking sites, has been found to predict greater levels of mental distress and substance misuse symptoms (Callaghan et al., 2015; Moore et al., 2012; Whittaker & Kowalski, 2015), but has limited effects on global life satisfaction (Moore et al., 2012).

Cyberbullying has been found to be highly prevalent on Facebook, with more than 75% of adolescents, and 62% of adult users reporting being victimised when using the site (Brack & Caltabiano, 2014; Dredge et al., 2014). Greater levels of engagement with Facebook (i.e., number of posts to Facebook), and larger online social circles (i.e., number of Facebook Friends) are associated with greater levels of online victimisation (Brack & Caltabiano, 2014; Dredge et al., 2014). The findings around the effects of cyberbullying and Facebook-based social support have been mixed. Social support drawn from online interactions can buffer an individual from the effects of cyberbullying (Cole et al., 2017),

however, offering support to peers via Facebook has been associated with greater mental distress than cyberbullying (McConnell et al., 2017). Additionally, studies that examine cyberbullying outside of children, adolescents, and university student populations are lacking, suggesting a greater need to investigate this type of online interaction in more general samples (Jenaro et al., 2018).

The Current Study

This study aims to explore the research question "what effect does both positive and negative Facebook-based social interactions have on mental and physical health outcomes for metropolitan, and regional Australians?" Overall, this study aims to test the direct effects hypothesis by evaluating the effects of Facebook-based and face-to-face social support, and cyberbullying on health outcomes, such as mental distress, life satisfaction, and physical illness, for persons living in metropolitan and regional areas of Australia. To explore this, several hypotheses were proposed:

H1a. It is hypothesised that greater Facebook-based social support will predict greater levels of life satisfaction, over and above face-to-face social support and negative social interactions (i.e., cyberbullying).

H1b. It is also hypothesised that greater Facebook-based social support will predict lower levels of mental distress, over and above face-to-face social support and negative social interactions.

H1c. Additionally, it is also hypothesised that greater Facebook-based social support will predict lower levels of physical illness, over and above face-to-face social support and negative social interactions.

H2. It has been suggested in previous research that persons living in geographically-isolated areas may use Facebook to supplement for reduced opportunities to access face-to-face social support (Indian & Grieve, 2014). As such, it is also hypothesised that the effect of Facebook-

based social support would be strongest in the regional sample, when compared to the metropolitan sample, as characterised by a larger standardised regression coefficient (β).

H3. Finally, drawing on cyberbullying research , it is hypothesised that greater levels of cyberbullying will predict greater levels of mental distress across both samples, but will not be uniquely predictive of physical illness or life satisfaction.

Methods

Participants and Procedure

Participants were recruited via an online survey, between August 2018 and March 2019, following approval from the University of Southern Queensland Human Research Ethics Committee (Approval number: H18REA134). Methods for recruitment included in-person recruitment, social media advertising (Facebook, LinkedIn, and Twitter), as well as recruitment via the undergraduate Psychology student pool at a regional Australian university. Participants were placed in a raffle or offered course credit (if a student) following the completion of the survey. Inclusion criteria were that participants had to be current Facebook users, reside in Australia, and be over 18 years of age. Three hundred and seventy-four participants were initially recruited; however, 13 participants were removed for incomplete or implausible responses, leaving a total sample of 361 participants.

Measures

Demographics

To categorise if a person was living in a metropolitan or regional community, participants were asked to provide their postcode, as well as distance from residence to the nearest population centre. This enabled categorisation as either metropolitan or regional residence based on the Australian Statistical Geography Standard (ASGS) Remoteness Areas criteria (ABS, 2016; AIHW, 2004). Demographic information, including age, gender, relationship status, citizenship status, time spent living in current area, and occupational status was also collected (see Table 5. 1. for sample descriptive statistics).

Table 5. 1.

Demographic Information for Both the Regional (n=156) and Metropolitan (n=205) Samples.

	Metropolitan (n=205)	*Regional (n=156)*
Age	36.12 (*SD*=11.88)	36.45 (*SD*=13.38)
Gender		
Male	51 (24.9%)	29 (18.6%)
Female	154 (75.1%)	127 (81.4%)
Employment Status		
Employed	155 (75.6%)	119 (76.2%)
Student	41 (20.0%)	26 (16.7%)
Not Employed	9 (4.4%)	11 (7.1%)
Relationship Status		
Married	80 (39.0%)	70 (44.9%)
Relationship	48 (23.5%)	27 (17.3%)
Divorced	17 (8.3%)	13 (8.3%)
Single	58 (28.3%)	45 (28.8%)
Did not state	2 (1.0%)	1 (0.6%)
Children	1.14 (*SD*=1.47)	1.30 (*SD*=1.40)
Length of Residency in Region (yrs.)	9.49 (*SD*=10.81)	9.99 (*SD*=10.49)
Citizenship Status		
Yes	193 (94.1%)	150 (96.2%)
No	12 (5.9%)	6 (3.8%)
Hours spent on Facebook (per day)	1.71 (*SD*=2.33)	2.10 (*SD*=2.55)
No. of Facebook Friends	313.57 (*SD*=294.61)	385.49 (*SD*=467.74)
Device most used to engage Facebook		

Mobile Device	171 (83.4%)	123 (78.8%)
Personal Computer	18 (8.8%)	20 (12.8%)
Tablet	15 (7.3%)	12 (7.7%)
Computer at School/Work	1 (0.5%)	1 (0.6%)

Facebook Use

The Facebook Intensity Scale (FIS) was used to measure Facebook use (Ellison et al., 2007). The FIS is a self-report measure designed to measure Facebook use, number of Facebook Friends, the extent to which a person actively engages with Facebook, and the extent to which a person has integrated Facebook into their daily life (Ellison et al., 2007). The FIS asks participants to rate how strongly they agree with statements such as *"Facebook is part of my everyday activity"* on a 5-point Likert scale (1 = *"strongly disagree"* to 5 = *"strongly agree"*). The scale also asks the individual to supply how many minutes a day they spend on Facebook, as well as the number of Facebook friends they have on their account. The FIS showed good internal consistency ($\alpha = .80$), and is a superior measure of Facebook use than standard frequency or duration measures (Kalpidou et al., 2011; Kim, 2014; Liu & Yu, 2013).

Cyberbullying

Cyberbullying was measured using a modified version of the Cyberbullying Victimization Experiences Measure (CBVM), which is a four-item self-report measure of cyberbullying and victimisation (Holfeld & Leadbeater, 2015). The CBVM was modified to focus on experiences of cyberbullying and victimisation participants experienced on Facebook. Participants were asked to rate how frequently they had felt victimised or cyberbullied on Facebook (e.g., *"Has someone posted something on your Facebook page or wall that made you upset or uncomfortable?"*) on a 5-point Likert scale (1 = *"Never"* to 5 = *"Nearly every day"*). The modified CBVM showed adequate internal consistency in this

sample (α = .75), and has been found to have strong construct validity (Holfeld & Leadbeater, 2015).

Social Support

The Interpersonal Support Evaluation List – Short Form (ISEL-SF) was used to measure face-to-face social support (Cohen et al., 1985). The ISEL-SF is a 16-item scale that measures four distinct categories of social support: emotional, instrumental, informational, and appraisal support (Brookings & Bolton, 1988; Payne et al., 2012). Participants are asked to rate how true they feel statements, such as *"When I feel lonely, there are several people I can talk to"*, are for them on a 4-point Likert scale (0 = *"definitely false"* to 3 = *"definitely true"*) (Cohen et al., 1985). The ISEL-SF showed good-to-excellent internal consistency in this sample (α = .89), and has been found to have strong construct validity (Brookings & Bolton, 1988; Delistamati et al., 2006; Payne et al., 2012).

Facebook-based Social Support

A modified version of the ISEL-SF, using the design utilised in Indian and Grieve (2014), was used to measure Facebook-based social support. Participants were asked to rate how true statements like '*When I need suggestions on how to deal with a personal problem, I know someone on Facebook I can turn to'* were to them. The modified ISEL-SF uses a 4-point Likert scale (0 = "*definitely false*" to 3 = "*definitely true*"). This measure showed excellent internal consistency in this sample (α = .90), and has been used in previous studies that examine Facebook-based social support (Indian & Grieve, 2014; Kim & Lee, 2011).

Mental Distress

Mental distress was measured using the Depression Anxiety Stress Scale-21 (DASS-21). The DASS-21 is a 21-item self-report questionnaire used to measure an individual's levels of depression, anxiety, and stress (Osman et al., 2012). The DASS-21 requires test-takers to rate how much each item relates to them in the previous week (e.g., "*I felt down-*

hearted and blue"), using a 4-point Likert scale, ranging from 0 ("*never")* to 3 ("*almost always"*). The DASS-21 showed excellent internal consistency in this sample (α = .95), with the subscales showing good-to-excellent internal consistency (α = .88-.93). The DASS-21 has shown strong construct and discriminate validity in previous studies (Henry & Crawford, 2005; Osman et al., 2012)

Life Satisfaction

Life satisfaction was measured using the Satisfaction with Life Scale (SWLS). The SWLS is a 5-item self-report questionnaire used to globally measure the extent to which a person experiences contentment with their current life circumstances (Diener et al., 1985). An individual rates the extent to which they agree with statements, such as "*In most ways my life is close to my ideal*", on a 7-point Likert scale (1 = "*strongly disagree*" to 7 = "*strongly agree*"). The SWLS showed good-to-excellent internal consistency (α =.89) in this sample, and has shown strong convergent and divergent validity (Diener et al., 1985; Pavot & Diener, 1993, 2008).

Physical Illness

Physical illness was measured using the Physical Illness Measure (PIM). The PIM is an eight-item scale that assesses how often an individual experiences physical illness sensations and symptoms (Jackson et al., 2002). Five questions ask an individual to rate how often they are bothered by general health issues (e.g., *"Cold"*) ranging from 1 *"Not bothered"* to 4 *"Greatly bothered"*. Three additional questions ask how frequently participants fell ill, missed work, and had to visit a doctor due to illness. The PIM has shown adequate internal consistency in this sample (α = .78).

Data Analysis

Descriptive statistics for both metropolitan and regional samples were generated for the continuous variables (life satisfaction, physical illness, mental distress, face-to-face and

Facebook-based social support, cyberbullying, Facebook use, age, and length of residency), and categorical variables (gender, employment, relationship, and citizenship status). Several variables were collapsed into dichotomous variables: gender (0 = male, 1 = female), employment (0 = unemployed, 1 = employed/student), Australian citizenship status (0 = Not an Australian citizen, 1 = Australian citizen), and relationship status (0 = single/divorced, 1 = married/in a relationship). Correlations between the target, predictor, and control variables were also examined across both samples. Three hierarchical regressions were used to test the hypotheses, which examine the unique predictive power of Facebook-based and face-to-face social support, and cyberbullying on health. An a prior power analysis was conducted in GPower, which indicated the minimum sample size to detect a moderate effect was 119 participants. Step 1 included control variables (gender, employment, relationship, citizenship status, Facebook use, age, and length of residency), with Step 2 incorporating the target variables (face-to-face and Facebook-based social support, and cyberbullying). The dependent variables were life satisfaction, physical illness, and mental distress.

Results

Multicollinearity was examined using bivariate correlations (see Table 5. 2.) Relationship and employment status correlated at greater than .70, suggesting multicollinearity, however, given their status as different constructs (face validity) and control variables, both variables were included in the final analysis. Paired-samples t-tests showed that there were significantly lower levels of Facebook-based social support than face-to-face social support in both the metropolitan (t=10.12, p<.001, d=.75) and regional samples (t=13.81, p<.001, d=.73). Additionally, independent samples t-tests showed that the metropolitan sample reported lower levels of mental distress (t=-2.42, p=.016, d=.25) and cyberbullying (t=-2.14, p=.033, d=.21), and higher levels of Facebook-based social support (t=1.97, p=.050, d=.15) than the regional sample. No other differences were detected in any of the other variables.

Table 5. 2.

Correlations of the Predictor, Control and Target Variables for Regional (n=156) and Metropolitan (n=205) Sample.

Metropolitan	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*	*13.*
1. Life Satisfaction	-												
2. Physical illness	-.31***	-											
3. Mental Distress	-.51***	.39***	-										
4. Face-to-face Social Support	.45***	-.23***	-.39***	-									
5. Facebook-based Social Support	.29***	-.09	-.25***	.55***	-								
6. Cyberbullying	-.28***	.18**	.42***	-.29***	-.13	-							
7. Facebook Use	-.06	.14	.12	-.03	.26***	.12	-						
8. Gender	.06	.14*	-.11	-.03	.01	-.04	.24**	-					
9. Employment	.24***	-.19**	-.13	.21**	.17*	-.14*	-.01	-.06	-				
10. Relationship	.29***	-.21**	-.14*	.31***	.21**	-.15*	.05	-.07	.81**	-			
11. Citizenship	-.10	.01	.04	-.04	.02	-.09	-.08	.05	-.11	-.15*	-		
12. Age	.10	-.13	-.20**	-.09	-.18**	-.10	-.11	0.01	.23**	.07	.08	-	

13. Length of Residency	-.03	.03	-.02	002	.03	-.11	.09	-.05	.09	.06	.14*	.35***	-
Mean (SD)	24.18 (6.65)	15.47 (5.57)	35.61 (11.74)	38.44 (7.08)	33.55 (7.50)	5.58 (2.10)	27.46 (6.59)						

Regional	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*	*13.*
1. Life Satisfaction	-												
2. Physical illness	-.38***	-											
3. Mental Distress	-.51***	.54***	-										
4. Face-to-face Social Support	.40***	-.28***	-.31***	-									
5. Facebook-based Social Support	.21**	-.17*	-.17*	.56***	-								
6. Cyberbullying	-.06	.14	.36***	-.19*	-.07	-							
7. Facebook Use	-.01	.17*	.05	.02	.37***	-.01	-						
8. Gender	.07	.17*	-.11*	0.10	0.12	-.02	.19*	-					
9. Employment	.13	-.07	-.04	.06	-.01	.12	-.11	-.01	-				
10. Relationship	.08	-.05	-.02	.09	.04	.09	-.02	-.03	.82***	-			
11. Citizenship	-.01	-.03	.03	-.01	.07	.09	-.05	-.01	-.05	-.09	-		

12. Age	.07	-.15	-.23**	-.03	-.08	-.10	-.19*	-.11	.36***	.15	.01	-
13. Length of Residency	-.02	.01	.08	.08	.09	.12	-.05	-.01	.04	.06	.15	.12	-
Mean (SD)	23.62 (7.18)	15.90 (6.53)	38.74 (12.78)	37.50 (7.44)	31.90 (8.34)	6.09 (2.52)	27.76 (7.38)					

Note. *p<.05, **p<.01, ***p<.001.

Hypothesis Testing

To test the hypotheses, three multiple hierarchical regressions were run for each sample (metropolitan and regional samples) with a unique outcome: life satisfaction (H1a), mental distress (H1b), and physical illness (H1c). Each model included two steps, with the first step including gender, age, employment status, citizenship status, marital status, length of residence, and Facebook intensity and use. The second step introduced face-to-face social support, Facebook-based social support (H2), and cyberbullying (H3). See Table 5. 3. for hierarchical regression results for all dependent variables across the metropolitan and regional sample.

Table 5. 3.

Hierarchical Regressions Examining the Roles of Cyberbullying, and Social Support on Health for Regional (n=156) and Metropolitan (n=205) Samples.

	Life Satisfaction				*Mental Distress*				*Physical Illness*			
	Metropolitan		*Regional*		*Metropolitan*		*Regional*		*Metropolitan*		*Regional*	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Controls												
Gender	.10	.08	.07	.03	-.16*	-.12	-.18*	-.14	.10	.12	.13	.16*
Age	.10	.16*	.03	.05	-.22**	-.27***	-.31***	-.27***	-.13	-.15	-.13	-.12
Employment	-.04	-.03	.17	.17	.09	.09	.20	.12	.02	.00	.05	.02
Citizenship	-.07	-.09	.01	.02	.04	.08	-.06	-.07	-02	-.01	-.03	-.02
Marital Status	.32**	.16	-.06	-10	-.22	-.05	-.15	-.10	-.22	-.14	-.07	.02
Length of Residence	-.05	-.09	-.03	-.06	.01	.07	.13	.11	-.08	.10	-.04	.06
Facebook Intensity	-.09	-.07	.01	.02	.18*	.14*	.09	.12	.10	.08	.13	.18*
Communication Variables												

FTF Social Support		.31***		.42***		-.23**		-.22*		-.15		-.21*
Cyberbullying		-.15*		.02		.31***		.27***		.10		.07
FBB Social Support		.12		-.02		-.15*		-.07		-.02		-.15
Model Statistics												
F	3.58**	7.97***	0.81	3.30**	3.17**	9.85***	2.50*	5.31***	2.74**	2.92**	1.47	3.03**
R^2	.11	.29	.03	.19	.10	.34	.11	.27	.09	.13	.07	.17
$R^2\Delta$		.18***		.16***		.24***		.16***		.04*		.11***

Note. FTF = Face-to-face. FBB = Facebook-based. * p<.05, **p<.01, ***p<.001.

Life Satisfaction

H1a hypothesised that greater Facebook-based social support would predict greater life satisfaction, over and above the effects of face-to-face social support, and would be most pronounced in the regional sample (**H2**). Additionally, cyberbullying would not be a unique predictor of life satisfaction in either sample (**H3**). Within the metropolitan sample, greater levels of face-to-face social support predicted higher levels of life satisfaction (β = 0.31, p <.001), and greater levels of cyberbullying predicted lower levels of life satisfaction (β = -0.15, p <.05), over and above the other variables, including Facebook-based social support. Of the control variables, older age predicted higher levels of life satisfaction in the metropolitan sample (β = 0.16, p <.05). Within the regional sample, greater levels of face-to-face social support predicted higher levels of life satisfaction (β = 0.42, p <.001), over and above the other variables. This result did not support **H1a**, **H2**, and showed support for **H3** in the regional sample only.

Mental Distress

H1b hypothesised that greater Facebook-based social support would predict lower life mental distress, over and above the effects of face-to-face social support, and would be most pronounced in the regional sample (**H2**). Additionally, greater cyberbullying would be a unique predictor of greater mental distress in both samples sample (**H3**). Within the metropolitan sample, greater levels of both face-to-face (β = -0.30, p <.001) and Facebook-based social support (β = -0.16, p <.05), predicted lower levels of mental distress, and greater levels of cyberbullying predicted higher levels of mental distress (β = 0.26, p <.001), over and above the other variables. Within the regional sample, greater levels of face-to-face social support predicted lower levels of mental distress (β = 0.32, p <.001), and greater levels of cyberbullying predicted higher levels of mental distress (β = 0.22, p <.01), over and above the other variables. Of the control variables, female gender (β = -0.16, p <.05) and older age

(β = -0.22, p <.01) predicted lower levels of mental distress in both samples. This result did not support **H2**, however, it did show partial support for **H1b** in the metropolitan sample, and supported **H3** in both samples.

Physical Illness

H1c hypothesised that greater Facebook-based social support would predict lower levels of physical illness, over and above the effects of face-to-face social support, and would be most pronounced in the regional sample (**H2**). Additionally, cyberbullying would not be a unique predictor of physical illness in either sample (**H3**). In the metropolitan sample, no variables predicted levels of physical illness over and above the other variables. In the regional sample, greater levels of face-to-face social support predicted lower levels of physical illness (β = 0.21, p <.05). Of the control variables, greater Facebook intensity and use (β = 0.18, p <.05), and female gender (β = 0.16, p <.05) predicted higher levels of physical illness. This result did not support **H1a**, **H2**, but did show support for **H3** in both samples.

Discussion

This study aimed to examine the effects of social support (both Facebook-based and face-to-face), and cyberbullying on health outcomes across metropolitan and regional samples. A number of hypotheses were prosed for this study: that greater Facebook-based social support will predict greater levels of life satisfaction (**H1a**), lower levels of mental distress (**H1b**) and physical illness (**H1c**) over and above face-to-face social support and negative social interactions (i.e., cyberbullying). Additionally, it was also hypothesised that the effect of Facebook-based social support would be strongest in the regional sample (**H2**), and that greater levels of cyberbullying will predict greater levels of mental distress across both samples, but will not be uniquely predictive of physical illness or life satisfaction (**H3**).

Overall, there was only partial support for the hypotheses proposed by this study. With regards to the effects of social support drawn from Facebook on health, Facebook-based social support was not a significant predictor of life satisfaction or physical illness, in either sample, and was only a significant predictor of lower levels of mental distress in the metropolitan sample. This would suggest **H1a**, **H1c**, and **H2** were not supported, and **H1b** was only partially supported. Cyberbullying was predictive of greater levels of mental distress in both samples; however, it was also predictive of poorer life satisfaction in the metropolitan sample, suggesting some support for **H3**.

The results of this study suggest three sets of findings. First, the utility of Facebook-based social support to improve health outcomes, over and above face-to-face social support, in regional Australian communities is low. Second, within metropolitan communities, Facebook-based social support is only effective in reducing mental distress and does not appear to improve life satisfaction or physical illness Also, social support, as an overall construct, does not appear to have any unique benefits for physical illness. Finally,

cyberbullying is uniquely predictive of mental distress in both samples, but only effects overall life satisfaction in metropolitan samples.

The overall findings of this study showed that, in the regional sample, the direct effect of Facebook-based social support did not influence any of the health outcomes, over and above the other target variables of face-to-face social support and cyberbullying. This result runs counter to the second hypothesis (**H2**), which proposed that, in the regional sample, greater Facebook-based social support would be predictive of all health outcomes, over and above face-to-face social support. This would suggest that face-to-face social interactions in these communities provide greater perceptions of social support, which in turn improves health. There are a number of possible explanations for this result. Firstly, the metropolitan sample reported significantly higher levels of Facebook-based social support when compared to the regional sample. This would suggest that persons living in metropolitan communities may stronger engagement and social ties with their online social networks, allowing Facebook-based social support to have a direct effect on health. When examined in the context of the direct effect hypothesis of social support, it is likely that face-to-face social support accounted for the total direct effect of social support on health. This would make Facebook-based social support redundant. Additionally, access to both mobile and fixed internet services in regional Australian areas has been found to be more problematic than in metropolitan areas (Park, 2017), possibly making accessing online social support difficult.

The second finding showed that, in the metropolitan sample, Facebook-based social support was uniquely predictive of lower levels of mental distress but did not predict better physical illness or improved life satisfaction. This is not entirely unexpected, as Facebook-based social support has been found to predict lower levels of depression and mental distress, over and above face-to-face social support (Frison & Eggermont, 2015; Wright et al., 2013), whereas the effects of Facebook-based social support, over face-to-face social support, on life

satisfaction have been doubtful (Kim, 2014). Social support, both face-to-face and Facebook-based, showed no unique effects on physical illness in the metropolitan sample. This runs counter to previous research, which has shown that both forms of social support can be beneficial to physical health (Cohen & Wills, 1985; Luszczynska et al., 2013; Nabi et al., 2013). Face-to-face social support was only uniquely predictive of lower physical illness in the regional sample. This may suggest that, in metropolitan communities, the utility of the direct effect of social support to buffer against physical illness may be rendered ineffective when considering negative social interactions.

Finally, the role of cyberbullying on increasing mental distress appears to be consistent across both samples. However, cyberbullying was only predictive of lower life satisfaction in the metropolitan sample. This finding mostly supports the third hypothesis (**H3**), which proposed that, in both samples, cyberbullying would be predictive of mental distress only. This would suggest that, while cyberbullying can be distressing across both regional and metropolitan communities, persons living in metropolitan areas experience lower levels of life satisfaction when cyberbullied. This might suggest that persons living in metropolitan areas are more likely to internalise the negative emotions of cyberbullying and allow them to detract from positive experiences (Callaghan et al., 2015). The metropolitan sample reported significantly higher levels of Facebook-based social support, which could result in a greater connection or investment in online socialising that could lead to this internalisation. There are two points of note with regards to these findings. The effects of cyberbullying on life satisfaction have been found to be mixed (Callaghan et al., 2015), with cyberbullying often affecting domain-specific life satisfaction (e.g., satisfaction with family), but not affecting life-satisfaction as a global construct (Moore et al., 2012). Additionally, cyberbullying has been found to be most harmful in the long term in women, who have been

found to ruminate on cyberbullying experiences (Jenaro et al., 2018). In the current study, both the regional and metropolitan samples were predominately female.

Also of note, Facebook use also predictive of greater levels of mental distress in the metropolitan sample. Higher levels of Facebook engagement, including posting to Facebook and number of Facebook Friends has been associated with greater levels of victimisation on the Facebook site (Brack & Caltabiano, 2014; Dredge et al., 2014). This could suggest that greater levels of Facebook use can result in greater levels of social support drawn from the site, but could also increase exposure to intentionally negative online social interactions.

Of the control variables, both increased age and being female were predictive of lower levels of mental distress. Increased age has been found in previous literature to be associated with lower levels of mental distress and depression (Salk et al., 2017). Both Facebook use and female gender were predictive of greater physical illness in the regional sample. The effect of Facebook use is unsurprising as accessing internet-based activities, like Facebook, have been found to promote sedentary behaviour, resulting in reduced physical health activities like exercise (Barkley & Lepp, 2016). Additionally, female participants living regionally reported the highest amount of time spent on Facebook. They also reported the highest number of Facebook Friends, which have been found to negatively affect physical health and well-being (Campisi et al., 2012; Kim & Lee, 2011).

Limitations and Future Research

There are a few limitations to this study: first, the nature of cross-sectional research makes determining casual results difficult. Second, the overrepresentation of female participants reduces the generalisability of these results, as males and females generally use Facebook at similar rates (Statistica, 2019, 2020). Additionally, this study did not control for the strength of the social ties found in the participants' face-to-face and Facebook-based social networks. It has been shown that stronger social ties provide greater feelings of

support, which can positively benefit individuals' mental health (Kim, 2014). An additional limitation is the relatively small size of the regional sample, which could create difficulty in detecting smaller effect sizes. Finally, this study did not control for participants'' use and engagement with other social media sites. It has been found that individuals will utilise more than one SNSs to develop and maintain social connection. This could present a direct for future research into the overlap of Facebook and other SNSs when used for social support. An additional consideration for future research is an examination of the role Facebook-based socials support may play in the mental and physical health of individuals' living in remote and extremely remote communities. First, this study is cross-sectional, making causal inferences difficult. Second, it has been found that strong and weak social ties on Facebook, as well as communication competence, can affect Facebook-based social support and health outcomes (Kim, 2014; Wright et al., 2013). This study did not control for how strong/weak interpersonal ties and communication competence can affect Facebook-based social support. Reviewing the strength of social ties on Facebook, across metropolitan and regional samples, could demonstrate a difference in the structure of a person's Facebook network, and could present a path for future research

Conclusion

This study aimed to examine the effects of cyberbullying, Facebook-based, and face-to-face social support on health outcomes, such as mental distress, life satisfaction, and physical illness, across regional and metropolitan samples. Facebook-based social support did not have a unique effect on health in the regional sample, and only reduced mental distress in the metropolitan sample. Cyberbullying had an effect on mental distress in both samples, but only affected life satisfaction in the metropolitan sample. No form of social support was predictive of better physical illness in the metropolitan sample, though face-to-face social support did predict better physical illness in the regional sample. Overall, this study showed

that the effects of online interactions, like cyberbullying and social support drawn from Facebook, on health could be location specific.

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Chapter 6: Individual and Community Facebook Use in Regional Australian Communities: A Thematic Analysis

This study aimed to answer the third research question: 'How do regional Australians describe their use of Facebook as a mechanism for accessing social support?' As this thesis aimed to follow a sequential explanatory mixed-methods design in order to quantify an effect, and then contextualise that effect (Cresswell et al., 2003; Ivankova et al., 2006), this study is qualitative in nature. This study drew on a sample of regional Facebook users, and utilised semi-structured interview techniques.

This study also drew on the results of both the systematic literature, and the two previous quantitative studies. As the quantitative studies found that Facebook-based social support was not associated with improved health in the regional samples, a number of semi-structured questions and prompts were devised to explore the thoughts and feelings of regional Australians about Facebook, online and in-person socialising, and regional issues. Additionally, following the results of the quantitative study, additional questions relating to negative online social interactions and cyberbullying were included.

For all material related to this study, including interview schedule, please see Appendix C. The study is presented in the format requested by the journal (excluding title page) and is unaltered from the submitted version.

Abstract

Facebook use has become widespread, and has been shown to provide users with greater perceptions of social support and social connection. However, there is currently little research into how and why persons living outside metropolitan areas use and engage with Facebook-based social networks. This paper explores the thoughts and feelings of 15 Australian regionally-based Facebook users on social media use, both personally and in their wider communities. A thematic analysis of the individual interviews identified four key themes: 'motivations for using Facebook', 'Facebook Messenger as a utility', 'Facebook vs. face-to-face interactions', and 'Facebook as the local community message board'. The findings show that Facebook is not only used as a tool for personal connection but has been adopted by wider regional communities as a mechanism for local community news and social connection. The participants highlighted the use Facebook in their regional communities as essential for personal and community social engagement.

Keywords: Facebook, regional, social media, social support, social connection.

Individual and Community Facebook Use in Regional Australian Communities: A Thematic Analysis

Introduction

Mental health outcomes for Australians who live outside of major cities have been found to be worse than the mental health outcomes for metropolitan-based Australians (AIHW, 2016; Bourke et al., 2012; Kelly et al., 2010). Issues such as drug and alcohol abuse, suicide, and anxiety and depression have been found to occur at higher rates for regional Australians when compared with metropolitan-based populations (AIHW, 2016, 2019a). This is often attributed to less resources and the reduced economic opportunities that are found in regional areas of Australia (Alston, 2012; Bourke et al., 2012; Fraser et al., 2002; Wrigley et al., 2005).

Additionally, the distances between population centres, and the small size of these local towns and hamlets can make it difficult for individuals to access social networks (Berry et al., 2006; Koopman et al., 2001; Lauckner & Hutchinson, 2016; Vyavaharkar et al., 2010). For example, the geographical distance between towns can discourage travel to meet with members of an individual's social network for social interactions or informal gatherings (Koopman et al., 2001; Lauckner, 2016). In addition to this, when compared to major cities, small population centres make it more difficult to find likeminded individuals to connect with face-to-face (Berry et al., 2006; Handley et al., 2012; Lyons et al., 2015) and can lead to regional Australians experiencing lower perceptions of social connection and social support (Berry et al., 2006; Handley et al., 2012; Lyons et al., 2015).

Social connection is the perception of closeness and belonging that an individual feels they have to their social network, and the extent of their social and emotional engagement with this social network, and is crucial to maintaining positive mental health outcomes (Ashida & Heaney, 2008; Detrie & Lease, 2007).. Limited social connectedness has been

associated with lower levels of self-esteem and higher levels of anxiety and depression (Ashida & Heaney, 2008; Detrie & Lease, 2007). Social support is the level of emotional or practical assistance that an individual perceives that their social network is willing and able to provide, based upon communication and reciprocity (Cohen & Wills, 1985; Taylor, 2011). Higher levels of perceived social support have been associated with decreased negative health outcomes, and can buffer individuals from the negative effects of stress (Cohen & Wills, 1985; Taylor, 2011). While social connection and social support are related, they are, in fact, distinct constructs, with social connection being the sense of belonging to a social group, and social support being the assistance that this group can provide.

Both social connection and social support are important protective factors against mental health concerns, such as depression and anxiety (Ashida & Heaney, 2008; Detrie & Lease, 2007; Taylor, 2011). Regional Australians can experience issues in accessing maintaining face-to-face social networks from which to draw feelings of social connection and social support (Berry et al., 2006; Koopman et al., 2001; Lauckner & Hutchinson, 2016; Vyavaharkar et al., 2010). However, with the rise of dedicated social networking sites (SNSs), which allow individuals to remotely communicate with their friends and family, it is likely that regional Australians have begun to use this technology to maintain the connection to their social networks.

Facebook is currently the most popular SNS in Australia, with 65% of the population maintaining an active Facebook account (Crowling, 2016; Sensis, 2017; Statistica, 2020) Facebook allows users to interact with friends and family, both in public posts and in private direct messages (Nadkarni & Hofmann, 2012; Oh et al., 2013). Additionally, Facebook allows individuals to join online social groups, often centred around specific interests (Nadkarni & Hofmann, 2012; Oh et al., 2013). As such, Facebook has become a major player

in maintaining social connection and improving access to social support networks (Gilmour et al., 2019; Grieve et al., 2013; Sinclair & Grieve, 2017).

Using Facebook to connect with friends and family has been found to increase feelings of social connection to an individual's social network (Gilmour et al., 2019; Grieve et al., 2013; Sinclair & Grieve, 2017). This form of Facebook-based social connection has been associated with reduced symptoms of mental health concerns, such as anxiety and depression, and increased feelings of well-being (Gilmour et al., 2019; Grieve et al., 2013; Sinclair & Grieve, 2017). Additionally, using Facebook networks to provide emotional and informational support has been associated with increased levels of perceived social support (Gilmour et al., 2019). Facebook-based social support can buffer an individual from the negative mental and physical effects of stress and improve life satisfaction, particularly for individuals with reduced opportunities for face-to-face social interactions (Gilmour et al., 2019). While the effects of social connection and social support via Facebook have been explored in other studies, no study has thematically examined the underlying motivations and methods of Facebook use of regional Australians in this context.

The Current Study

In line with the literature reviewed above, the research question ‘How do regional Australians describe their use of Facebook as a mechanism for accessing social connection and social support?’ was proposed. As such, this study will draw upon the descriptions of regional Australians who use Facebook and will explore the themes associated with using Facebook to find and maintain social networks within a regional community. The underlying motivations for regional Australians to engage with Facebook as a means of social connection will be explored. Additionally, the practical means of engaging with Facebook-based social networks will also be discussed. This study will also explore the difference between using Facebook to interact with social networks and draw on social support, when

compared to face-to-face social interactions. Finally, this study will discuss the methods that the wider regional communities use to engage with Facebook.

Method

Given the nature of the research questions, and the pre-existing theoretical underpinning of Facebook, social connection, and social support, it was decided that a theoretical thematic analysis (i.e., a thematic analysis that drew on the pre-existing theoretical models of social connection and social support) was appropriate (Braun & Clarke, 2006). As such, to address these research questions, 15 semi-structured interviews were conducted with Facebook users based in regional Australia. The interview questions were focused on Facebook use, methods of social engagement on Facebook, local community engagement via Facebook, as well as the participants' opinions on Facebook and face-to-face social interactions.

Participants

The participants in this study were 15 Facebook users from regional areas in south-eastern Queensland and northern New South Wales, Australia. All participants had to be over the age of 18 and have an active Facebook account that was accessed at least weekly. The participants were both male (n = 5) and female (n =10) and had a range of occupations (see Table 6. 1.) The age of the participants ranged from 20 years to 63 years (M = 38.87, SD = 15.32). Participants reported a wide range of Facebook use and engagement, with daily time spent on Facebook ranging from 10 to 20 minutes, to 9 hours (M = 1.95 hours, SD = 2.57 hours). Additionally, the number of Facebook Friends varied from 55 to 1014 (M = 400.80, SD = 313.40).

Table 6. 1.

Pseudonyms and Demographic Information for the Participants (N = 15).

Pseudonym	*Age*	*Gender*	*ASGC Category*	*Occupation*	*Facebook Friends*	*Time on Facebook (per day)*
Beth	34	Female	Inner Regional (NSW)	Business owner	283	30-60 minutes
Melissa	28	Female	Inner Regional (NSW)	Waitress	327	1 hour
James	35	Male	Outer Regional (NSW)	Government worker	400	30 minutes
Amy	35	Female	Outer Regional (NSW)	Psychologist	460	30 minutes
Steven	29	Male	Outer Regional (NSW)	Government worker	760	45 minutes
Kate	30	Female	Outer Regional (NSW)	Public servant	100	1 hour
Sarah	29	Female	Inner Regional (Queensland)	Client support officer	887	1-2 hours
Jane	20	Female	Inner Regional (Queensland)	Journalist	1014	1 hour
Vanessa	22	Female	Inner Regional (Queensland)	Journalist	772	6-8 hours
Albert	28	Male	Inner Regional (Queensland)	Support worker	178	2-4 hours
Abigail	62	Female	Outer Regional (Queensland)	Administration assistant	348	1 hour
Harriet	62	Female	Outer Regional (Queensland)	Photographer	227	1 hour
Mary	49	Female	Outer Regional (Queensland)	Teacher aide	101	1 hour
George	63	Male	Outer Regional (Queensland)	Retiree	55	9 hours
Michael	57	Male	Outer Regional (Queensland)	Hostel manager	100	10-20 minutes

Recruitment and Data Collection

This study was approved by the University of Southern Queensland's Human Research Ethics Committee (H18REA300). Participants were recruited through the research team's personal and professional network and social network websites such as Facebook, Twitter. Participants were drawn from a variety of regional areas, as designated by the Australian Statistical Geography Standard (ASGS) Remoteness Areas criteria (ABS, 2016; AIHW, 2004). Potential participants who expressed interest in participating in the study were

contacted by the lead researcher and were directed to an online consent page with a short initial demographic survey. Participants were placed in the running for a prize following the completion of the initial survey. A convenient time for an interview was then determined. Most of the interviews were conducted in person (n =13), with the lead researcher travelling to the participants' town of residence. The final two interviews were conducted via Skype. All interviews were conducted in late 2019 and were transcribed verbatim from audio-recordings.

Semi-structured interviews were utilised, with open questions being asked, and probes being used to elicit more in-depth answers. During the interview the participants were asked questions about their use of Facebook and associated behaviours. Additional questions were asked that focused on the socially supportive expressions that Facebook can invoke. Participants were also questioned on the use of Facebook in their community, and the types of public and private Facebook interactions that the participant used. Finally, participants were asked about interpersonal interactions with others face-to-face and how they compare to Facebook-based interactions.

Data Analysis

The approach to data analysis was thematic analysis, which is outlined in Braun and Clarke (2006). The research team followed the steps recommended by Braun and Clarke (2006): become familiar with the data, generate initial codes, identify themes, review themes, define themes, and produce the research report. The first author coded the themes, with the second and third authors reviewing the themes. The data was coded in NVivo, with the initial codes being identified at the latent level. These latent codes were then organised into themes. The themes were defined and analysed within the relevance to the research question. Any disagreements with the themes were discussed until consensus was reached. Both the codes and themes were regularly compared to the transcripts to ensure the presented findings were

contextual and representative of the statements made by the participants. The themes were interpreted through the pre-existing theoretical framework of social connection and social support.

Findings

The primary focus for the study was to explore engagement with Facebook and how social connection and social support are facilitated within this social networking environment. Four themes were identified: ‘motivations for using Facebook’, ‘Facebook Messenger as a utility’, ‘Facebook vs. face-to-face interactions’, and ‘Facebook as the local community message board’. Of these themes, the first three reflect the individual use of Facebook, with the final theme reflecting the use of Facebook at a community level to facilitate communications within this context.

Theme 1: Motivations for using Facebook

Throughout the interviews, participants often described their underlying reasons and motivations for using Facebook. The motivations identified by participants for using for Facebook included: ‘consuming time’, ‘using Facebook as a news source’, and ‘using Facebook to stay in contact with friends and family’. These subthemes suggest that Facebook, while a dedicated SNS, is also used in ways that go beyond socialising and positively presenting an individual’s life and experiences, instead providing a communications utility in individual lives.

Consuming Time on Facebook

All the participants described being motivated to scroll through their Facebook Newsfeed to consume time or relax. Passive Facebook activities, like scrolling and looking at photos, has previously been found to be a factor in how time is spent on Facebook (Special & Li-Barber, 2012; Tosun, 2012). In the current study participants often described spending time on the Facebook Newsfeed to relax or to occupy time when there is little else to do. This suggests that using Facebook is seen as a recreational activity, like watching television. For example:

> Scroll - I scroll through and mainly use the feed to relax…Or to occupy myself, when I'm bored. ((Amy 35, Outer Regional)

> I don't really [use Facebook a lot]…but more so when I'm bored or at times of relaxation, I'll then use it. (James 35, Outer Regional)

Many participants reported that checking Facebook is often the first thing that they do in the morning. As such, many participants reported that checking Facebook has been incorporated as a part of their daily routine. This would suggest that Facebook use had been integrated as an everyday activity, with participants often having unconsciously scheduled time to use Facebook:

> Yeah, usually first thing I do in the morning is just jump onto Facebook and that's for a couple of hours. (Albert 28, Inner Regional)
>
> In the morning when I wake up, I'll make a cup of coffee and check Facebook or messages. (Mary 49, Outer Regional)

Participants also reported using Facebook when feeling poorly motivated or had little else to engage with, suggesting that using Facebook, particularly on a phone, is a method of procrastination. For example:

> If it's a day where it's a bit of a cruisy day or my head's not right in it, I feel like I'm more inclined to pull out my phone [to check Facebook]…I feel like there are days where it's like if I'm not in that headspace then [Facebook] is a good procrastinator. (Sarah 29, Inner Regional)

> I don't have a lot of energy, I can just sit there and scroll, and scroll. (Harriet 62, Outer Regional)

This use of Facebook to delay important tasks or to consume time can lead to negative effects on well-being (Meier et al., 2016). As such, many participants felt that scrolling through their Facebook feed can be a negative behaviour and saw Facebook overuse as an unhealthy activity.

> Too much [time], I would say, I think I've lost [too much time] - definitely too much, but any time on Facebook sometimes I feel like it's just a waste of time…I would often just check but then get stuck in looking. (Melissa 28, Inner Regional)

Passive Facebook use to consume time was reported by all participants (i.e., scrolling through the Facebook Newsfeed), with many using this to procrastinate or avoid having spare time. This type of passive Facebook use has been associated with decreased levels of concentration, academic achievement, and increased levels of anxiety and depression (Baym et al., 2020; Lyngs et al., 2020). Though most participants were aware this use of Facebook can be unhealthy, the high level of integration by Facebook into the participant's life made this seem unimportant. This may suggest a need for more education on mindful Facebook use.

Using Facebook as a News Source

Facebook has become a major source of news and current affairs for many adults, with many users describing Facebook as their primary source of news (Kümpel et al., 2015; Müller et al., 2016). In the current study many participants reported on their motivation to use Facebook as a source of information and news, with this being particularly important for people living in regional areas. Regional areas in Australia often have their own dedicated sources of current affairs, with local news stories only being of interest to members of that specific community (Waller et al., 2014). As an individual often only engages with news or information that is relevant to their own interests or social group (Quattrociocchi et al., 2016), the participants indicated that Facebook can also be a mechanism for information delivery specific to regional areas, but also, importantly, news from around the world, beyond the small community.

> In a regional community like this it’s an asset, basically. Because we’re so remote we can always find out things that are going on in the world for a start. I like the news things, I get all the news feeds, so it’s a way of getting the news. (George 63, Outer Regional)

The participants noted that being a part of local Facebook pages was a good source of local news and information, specific to their town. This form of localised news delivery

allows the user to interact with other Facebook users experiencing the news events. For example:

> I'm part of the buy-swap-sell groups, community notice board. I'm in a crime prevention group… There's a page called Ask [Around], which is just random stuff. It's like Girls Advice but for [Our Town]. It's like missing dogs…so that's good. (Jane 20, Inner Regional)

Facebook as a source of news was also particularly pertinent to two participants who were news reporters. Both participants reported using Facebook as a potential source of news for articles that they would craft in their professional roles. Such use of Facebook is an interesting intersection between personal Facebook accounts and the impact that information from these might have in a professional context. This use of private Facebook accounts by reporters to source news has been previously noted to occur in regional towns and cities (Hess & Bowd, 2015). This is likely due to the small populations of these communities, with journalist in small towns generally interacting more directly with members of the community (Hess & Bowd, 2015). This was also evidenced in the current study:

> Occasionally we get story tip-offs from those groups. There'll be people who are complaining about something and we'll chase it up from there. Or if there's an accident or a fire somewhere or people can see smoke or hear sirens, they'll say 'where are those sirens coming from', 'where is that smoke from', 'can you smell anything'…everything and anything you could think of, they've probably posted it in those groups. (Vanessa 22, Inner Regional)

The motivation to use Facebook as a source of locally focused news and current affairs was common across most participants. Engaging with local news has been found to foster a greater sense of community and social connection (Paek et al., 2005). As such, using Facebook in this way likely contributes to greater feelings of social connection and community integration. Many participants mentioned their identity as regional Australians being an influential factor in this motivation for using Facebook.

Using Facebook to Stay in Contact with Friends and Family

Almost all participants stated that they were motivated to use Facebook as a means of staying in contact with friends and family, particularly those who live outside of the participants' hometown. This motivation appears to be in line with the need to belong and for relationship maintenance, which has been noted as a motivation for using Facebook (Seidman, 2013; Special & Li-Barber, 2012). This motivation also seems to be the most consistent with Facebook's designed role as a social networking site.

> Communication. Staying in touch with people. I use [Facebook]'s call feature. Two nights ago I would have talked on the Facebook phone feature to a friend in [the US] for an hour and a half. I've got a sister in [the US], so I use that to stay in touch with her. (Harriet 62, Outer Regional)
>
> [My husband] has a daughter who's in [another town]. I friended her, so when she posts things with the kids and everything like that, you can see what they're up to and how much they've grown and stuff, because I hardly ever saw or see them at all. So, that's something you see through Facebook. (Abigail 62, Outer Regional)

Several participants had moved to regional communities for employment opportunities and stated that they used Facebook to stay in contact with friends and family who they may have left behind in their hometowns.

> Well I think it's huge in being able to keep in contact with all my friends that live out of town. Because I lived in [the city] for about seven years, so I do have a lot of friends up there. (Sarah 29, Inner Regional)
>
> I moved interstate at the end of last year, so I use it quite a lot to keep in touch with friends too. (Vanessa 22, Inner Regional)

Relocating to regional areas for employment opportunities can lead to feelings of loneliness and isolation that can affect well-being and mental health (Bates, 2014). Social support drawn from Facebook has been found to improve the well-being of individuals with low levels of face-to-face social support (Gilmour et al., 2019; Indian & Grieve, 2014). Participants with less ties to the local community due to job relocation would be motivated to engage with Facebook for social support and connectedness. Participants' who reported being

away from their friends and family for employment opportunities were likely engaging with Facebook as a means to supplement for reduced face-to-face interactions with friend and family. Additionally, Facebook would allow long-term residents of these communities to engage with friends and family who may have relocated.

Previous research, that draws on participants largely living in metropolitan areas, has found the motivations for using Facebook have been found to be relationship maintenance, entertainment, and passing time, (Seidman, 2013; Special & Li-Barber, 2012). Overall, the motivations for using Facebook reported by the participants was consistent with previous research on Facebook use and motivations and has furthered understandings of this commonality within regional communities. These motivations specifically were using Facebook as a form of recreation, a news source, and as a method of social connection with friends and family. Using Facebook as means of consuming time is likely a universal motivation for Facebook users, however, being motivated to use Facebook as a news source and to stay in contact with friends and family appeared to draw on regional specific concerns, such as geographical isolation, and accessing wider news sources The participants were motivated by, at least in part, by the unique challenges of living outside of major metropolitan areas.

Theme 2: Facebook Messenger as a Utility

While the Facebook Newsfeed was often described as a way to consume time or as a source of news, the Facebook Messenger function was described by participants as a necessary utility for living in a regional community. Rather than publicly posting statuses or photos on an individual's Facebook Newsfeed, Facebook Messenger allows users to privately direct message other users (Nadkarni & Hofmann, 2012). This function appears to have supplanted traditional phone calls and text messages as the primary method of communication among regional Australians.

> I lived [in another town] my whole life until I was 18. I'm now only 20, so that's a lot of my life. Yeah, still have all my family and a lot of my friends [in another town]. So, I use Facebook Messenger a lot to get in touch with people. (Jane 20, Inner Regional)
>
> I have some young friends who are too poor to keep their phones working with [phone company], so Facebook, it's just a bit of data. So we message through Messenger, where it's just data rather than a call with [the phone company], and so many of the young ones, they don't face-to-face so good. Messenger, is a quick text. (Harriet 62, Outer Regional)
>
> I would say that Messenger is probably where I do most of my interaction with my friends and it's that private interaction which used to be more what I would use my actual phone and messages for but a lot of that has converted to Facebook. It's very rare that I will actually text message someone, except for my mum, who doesn't have Facebook. (Sarah 29, Inner Regional)

This finding shows that many of the participants have become reliant on Facebook as their primary method of communication with most people in their lives. When using forms of computer mediated communication a significant driver is the perception that the individual user is a part of a greater social network (Park et al., 2014; Xu et al., 2011). Additionally, users who perceive the virtual environment they are engaging in as being well populated by users are more likely to continue to engage in that environment (Xu et al., 2011). As Facebook is the most popular form of social media, with more than two-thirds of the Australian population reporting to use Facebook regularly (Crowling, 2016; Sensis, 2017), it makes sense that all participants have begun to utilise Facebook Messenger as their primary method of computer-mediated communication.

Many participants described using Facebook Messenger multiple times per day, both as a mechanism for socialising and as an augmentation to occupational or work-related communication. This method of communication appears to be integrated into the participants' methods of communicating with colleagues. For example:

> Through work, we have a group message, because I'm a Teacher Aide. So, if teachers are out, if their kids are sick, they'll send a message through. Or if I'm ill or something, I'll give everyone a heads up that way – especially if a teacher is out and we work with them, they'll send through their planning so we can set up. (Mary 49, Outer Regional)

> We never have staff meetings because we're just constantly just putting it in a group chat, which I don't think is that great, but anyway. But just keeping everyone up to date on what's happening at work and stuff like that. (Melissa 28, Inner Regional)

Facebook Messenger was described by the participants as easier to use than more traditional forms of communication, such as phone calls or face-to-face interactions. As previously mentioned, Facebook is currently the largest SNS, and as such, most individuals in the participants' social circle would have an account. The convenience of accessing members of an individual's social circle via this method of communication appears to be the main reason for engagement by all participants.

> It's more so Messenger is just an easy service, especially if someone is overseas travelling. It's an easy form of communication but it doesn't change not seeing someone. (James 35, Outer Regional)
>
> It's just like we're so time poor so when you catch-up with someone face-to-face you're like gifting them an hour of your time; whereas I just having open chats with people we don't actually say ‘oh hello’, ‘how are you’ and ‘goodbye’ when we're done. I send a message through and they might write back an hour later or a day later, and then I'll send another message to them, and there's this ongoing conversation that lasts forever. We can do that whenever. (Beth 34, Inner Regional)

Additionally, several participants noted they are “time-poor” and that utilising Facebook Messenger allows them to more effectively exchange information with friends and family and maintain their social ties. Individuals living in metropolitan communities who perceive themselves as time-poor are also more likely to utilise computer mediated communication to maintain relationships (Cho & Hung, 2015). This would suggest that this motivation for using Facebook Messenger is consistent across geographically diverse communities.

The use of Facebook Messenger as the primary method of communication with most of an individual’s social circle appeared to be universal to all participants. Several participants also reported using Facebook Messenger to augment their occupation activities, as well as to maintain contact with individuals who were in other towns or countries. This

would suggest that Facebook Messenger has become a communication utility in regional communities. This is likely due to the popularity of Facebook, as most adults in these communities have an active Facebook account. With more than 16 million Australians using Facebook regularly (Facebook, 2020), regional Facebook users who use Facebook Messenger in this way would have an additional avenue of contact with the majority of their social circle.

Theme 3: Facebook vs. face-to-face interactions

Several participants referenced the comparison of social interactions on Facebook when compared to face-to-face social interactions. Overall, all the participants felt that face-to-face social interactions were more meaningful for them, which is consistent with previous research into the effects of face-to-face vs. Facebook-based social interactions and support and life satisfaction (Cole et al., 2017; Gilmour et al., 2019; Indian & Grieve, 2014). Interactions and support via Facebook has little impact on the life satisfaction and well-being of individuals with high levels of interpersonal or face-to-face social support (Cole et al., 2017; Gilmour et al., 2019; Indian & Grieve, 2014). Findings from participants in the current study support and extend these assertions:

> I think that the face-to-face is definitely more meaningful. I think I just feel that in messages on Facebook or Messenger are just a little bit empty. Like you just don't get the depth that you would in just having a proper conversation with someone. (Melissa 28, Inner Regional)

> Because I do enjoy face to face communication, especially good conversations and you just don't get that on something like Facebook…It's more designed for small things. I don't think it's really up to bigger conversations, deeper conversations and it's more superficial in that you do make better connections when you're in person. (Albert 28, Inner Regional)

Many participants reported using Facebook to augment and organise face-to-face social interactions, indicating an interaction between face-to-face and online communities. The participants reported that the utility of Facebook as social utility and aggregator was high but that it did not replace traditional face-to-face interactions. This would be consistent with

the previous theme ‘Facebook Messenger as a utility’ and shows that Facebook is seen as a way to augment, rather than replace, regular social interaction.

> A lot of activities are organised through Facebook, in terms of when I am going to catch up with people. Especially celebrations like birthdays; birthday weekends, going away for a weekend was all organised through Facebook. It definitely helps understanding what sort of activities are going on and what sort of interaction you are going to be having. (Sarah 29, Inner Regional)
>
> I don't use it instead of face-to-face catch-ups or phone catch-ups - it helps me to organise those catch-ups. Like a steppingstone to better quality catch-ups. (Amy 35, Outer Regional)

This use of Facebook to augment the participants’ social interactions and organise face-to-face social events would result in Facebook being seen as less of a social networking tool, and more of a means to an end when engaging in social activities. This would mean that organise face-to-face social interactions would be the motivation for using Facebook.

Reflections on Engagements with Facebook

Many participants described feeling positive towards Facebook, and its usefulness in a regional community. These feelings are mainly focused around the usefulness of Facebook as a method of communication and connection. Given that Facebook, as an SNS, is focused on maintaining existing relationships, or developing new social connections (Ellison et al., 2007), it is unsurprising that the participants felt that Facebook was useful as a means of engaging communications.

> Facebook is a great tool for me to keep in contact with these people and to have that connection with those people when I can't physically be near them. (Sarah 29, Inner Regional)
>
> I think I would struggle to contact as many people as I do without Facebook…I am not an extravert. I'm an introvert who loves people, but my battery runs down in large groups… I talk to people constantly, but I think I would be lost to try and contact and make arrangements for as many things as I do without Facebook. (Abigail 62, Outer Regional)
>
> One hundred percent improves connection. (Amy 35, Outer Regional)

Conversely, many participants noted that there were several negatives associated with using Facebook as a means of connection. One negative described was a difficulty in

understanding tone and intent using written text. Trying to understand tone in text-based communication, and the fear of misinterpreting social signals has been found to increase stress (Fleuriet et al., 2014; Kraut et al., 2001). The participants described this difficulty and felt that this shortcoming of using Facebook detracted from the level of connection with the other user(s).

> I think it's really hard to convey tone over Messenger, you don't know where people are coming from; you don't know whether it's a happy or moody message that kind of thing. (Vanessa 22, Inner Regional)
>
> Well you can't read body language on Facebook and I am very careful how I phrase things when I type an email, or a text or a Messenger message, or even comment, because you can't read the emotional. You can't read the nuances. You can't read how something comes across to someone, [it] could be different to how you intended with the written word. (Abigail 62, Outer Regional)

Many participants also felt that by using Facebook to view the content of their Facebook Friends, they were only passively involved with their friends and family, creating the illusion of connection. Passive Facebook use (i.e., viewing other users content without communication) has been associated with weaker social ties to Facebook Friends, increased anxiety, and decreased levels of well-being (Burke et al., 2010; Shaw et al., 2015; Verduyn et al., 2015). Active Facebook use (i.e., directly communicating with Facebook Friends by commenting on posts or direct messaging) has been associated with stronger social ties with Facebook Friends and decreased feelings of loneliness (Burke et al., 2010). This suggests that, while Facebook is seen as useful when used to actively communicate with others, it does not provide the level of social or emotional connection the participants require when used passively.

> Being in the computer and feel like I've interacted with the world, and I haven't. It's an illusion. Facebook can be whatever you want it to be. (Harriet 62, Outer Regional)
>
> Because it's a little bit weird, but you feel like you know them still or you kept in contact. Like you still do see what's happening in their lives and you feel like you've still got that connection, even though you really probably don't. (Melissa 28, Inner Regional)

Another negative noted by participants is the tendency for people to only post positive things, creating a positive bias or “highlight reel” effect. This form of social posting could lead to issues with social comparison. Facebook users who post content with high levels of positive self-presentation can cause other users to perceive they should be happier as well, which can lead to lower levels of well-being (Chou & Edge, 2012; Kim & Lee, 2011). Conversely, users who post content that is perceived to be honest, regardless of positive or negative content, have been found to have higher levels of Facebook-based social support and well-being compared to users who post overly positive content (Kim & Lee, 2011). Participants felt many other users would often post content that was overtly emotionally positive, and this detracted from the feeling of connection.

> There's a very big positivity bias online, but especially with social media…There's also a very glossy veneer on the other end, where people are showing how amazing their lives are, because they want to put out that message that their lives are amazing. (Albert 28, Inner Regional)
>
> I think just being aware there are different reasons for use and if you are using [Facebook] like a fashion magazine, being particularly conscious of it not being reflective of someone's everyday life. (Amy 35, Outer Regional)

These perceived difficulties with socialising on Facebook could partially explain the focus of the participants in using Facebook as a communication utility, rather than a true SNS. Overall, participants felt that face-to-face social interactions were more meaningful and greater feelings of connection with their friends and family, when compared to interacting via Facebook. Facebook was generally used to augment minor social interactions, and to organise face-to-face social events. There were a number of negative elements associated with using Facebook to communicate with friends and family. Specifically, understanding tone in textual communications, the false perception of connection, and positive bias in posts. While Facebook was seen as a useful communication tool, overall was not preferred as a means of socialising when compared to traditional face-to-face interactions.

Theme 4: Facebook as the Local Community Message Board

The participants noted that their local communities engaged with Facebook by using local Facebook Pages for informational support. Every participant discussed the Facebook Pages set up and run by members of the local community, aimed only at local inhabitants of their town. These pages often have different implicit purposes, and their own communication style.

> There's the [local town] community page on Facebook. Then there's also the [local suburb] and [local area] community page on Facebook. Then there's the [local council] and [wider area] community - there's all these little pockets and everyone has their own little way of communicating. (Beth 34, Inner Regional)

> [There are] community groups; like [the local town] and [the next town over] and [the next town after that] and those kind of local areas…It's funny the different community groups do different things. Like the [Local] Community Group is definitely more inclined to post about events and things that are coming up. But [the town's Facebook page] is definitely more gossip I would say. (Vanessa 22, Inner Regional)

The participants felt that these pages were a good source of information on local issues. This community engagement with local Facebook Pages was tied in with participants' motivations to use Facebook as a source of community information. Additionally, these local Facebook Pages provided a mechanism for broader community engagement and connection.

> [You can find out] when things are open and closed, how long they're open for, everything…I even enquired whether this place here had an EFTPOS. Straight away I got an answer, instantly. (George 63, Outer Regional)

> I know there's a mums and bubs group. There's a lady on there that she'll put on things that they could do, like gymnastics, and there's a reading group at the library and just things, especially for new people coming to town. New people come to town to visit for work or with the construction or whatever, yeah, they'll ask what's to do around and people will comment that way. (Mary 49, Outer Regional)

Conversely, participants also felt that there were cases of intentionally negative social interactions and cyberbullying on these local pages. These intentionally negative social interactions included both indirect public shaming and direct insults. Some participants reported that these types of negative social interactions detracted from the sense of social connection on these pages. For example:

> Sometimes people get called [names] for their misspellings or something like that. Sometimes there's public shaming posts. There was one the other day, someone parking at the shopping centre, and they were called [the town]'s worst driver in the post. (Jane 20, Inner Regional)
>
> I probably see people maybe belittle others with comments. Maybe if someone posts a question or something like that and someone else responds with well that's a dumb question. (Steven 29, Outer Regional)

However, most participants noted that by engaging with these local pages, a sense of community was often fostered, often via offers of tangible support. The use of local Facebook Pages appears to have replaced the traditional 'local community message board' in these communities. This is unsurprising, given the high usages and potential for engagement with posts, compared to traditional flyers. Such community sites can therefore be a mechanism for socially connecting people and also as a means of community exchange of goods and services, promoting community cohesion and sense of belonging. For example:

> People really band together on the community sites. (Harriet 62, Outer Regional)
>
> Because everyone on there and you see all the info and we're like 'oh my lemon tree's busting; I've got lemons to give away; just come around and get some lemons'. I leave four bags hanging on my fence. But it's really specific to our little tiny area. (Beth 34, Inner Regional)

This use of local groups by the participants appeared to foster a greater sense of community. This would make these local groups, reported as being run by local residents, a way to build social connection and community spirit. However, the negative online social interaction reported by participants' appeared to make them wary of using these Facebook Pages too much.

Local Events

Almost all participants stated they had attended Facebook Events set up by organisations in their local area. Often these events would be suggested on the local Facebook Pages, or by Facebook itself. These events were organised by the local council or community leadership. However, many local community members would organise these events at a grassroots level.

> Because [of Facebook Events] I've heard of the local events. Like [an art's festival]. So if it wasn't for Facebook, I wouldn't know they did things. Even to catch the times of the ANZAC parade. (Harriet 62, Outer Regional)
>
> I like the calendar feature and with all the events it posts because I like to know what's happening…I always like the bonfire they do out west up here every year…Something like that will pop up and I'm interested. Around that time, I know that event will pop up so I can save it and I know when it's on type thing. (Beth 34, Inner Regional)

However, several participants felt that the local events were not well advertised enough for them to find or to attend. This might lead to feelings of disengagement with the local community and may suggest a greater need for members of local communities to engage with local Facebook Pages when organising local events. For example:

> I've attempted to use it to find events, and I've been unsuccessful. I tried to link in with some sports in [the town], using Facebook and I couldn't find anything. I really hoped that I would be able to, because so much stuff's on Facebook groups in [the town]. I found my hairdresser through Facebook, so I guess services, as well, because they don't have Facebook pages. (Amy 35, Outer Regional)
>
> [Facebook Events' are] a bit like the newspaper in a way. You find out about something the day it's on. I don't know whether it's due to the way I receive notifications, but I never seem to find out about things too far ahead. (Michael 57, Outer Regional)
>
> I don't see them sharing too many events, because I think they set up a separate events page for that, but occasionally I'll see someone post every now and again about an event. (Vanessa 22, Inner Regional)

These local events were noted as being a good way to find out what was going on in the local area, and engage in community activities. However, the lack of convenient advertising did lead to some participants' dissatisfaction, which may indicate a need for local groups and councils organising such events to focus on earlier community engagement,

All participants engaged with local Facebook Pages, most being members of more than one Facebook Pages targeting their local area. These local Facebook Pages provided individuals with a trusted source of local news and information. This type of Facebook engagement occurred at the regional level, and appear to create a sense of community, resulting in larger community engagement. However, intentional negative social interactions

did detract from the large sense of community these pages invoked. The reported use of local Facebook Events did however promote greater community engagement and was often useful in helping participants know when local events were occurring. This would further support the idea that Facebook can be used to augment or supplement social connection and support in regional communities.

Discussion

This study aimed to examine the use of Facebook as a mechanism for social connection and social support in regional Australian communities. Fifteen regional Australians who regularly used Facebook were interviewed about their use of Facebook, and how they used it to develop and maintain their social networks. Three themes were identified from the data related to individual Facebook use ('motivations for using Facebook', 'Facebook Messenger as a utility', and 'Facebook vs. face-to-face interactions') with the fourth theme reflecting how Facebook had become strongly integrated into regional communities ('Facebook as the local community message board').

These findings present several implications, the first being that Facebook use has been strongly integrated as a means of communication in regional Australian communities. The use of local Facebook Pages specific to each area, as well as the understanding that Facebook Messenger is a communications utility, shows that regional Australians are integrating Facebook into everyday life. Additionally, the use of Facebook Messenger as a means of interpersonal communication with friends and family appears to have supplanted traditional forms of telecommunication like text messages and phone calls. This shows that Facebook has moved from being an SNS used for entertainment to a crucial communication tool.

Local Facebook Pages associated with local business can often provide users with time-effective information on local business matters (Cui, 2014; Given et al., 2017). While the Facebook Pages of local business have previously been shown to also provide information on wider community matters (Cui, 2014), the local pages described in this study were set up for, and administrated by, members of the local community. The use of locally run Facebook Pages by a large proportion of regional population centres also shows that Facebook has become a hub of local news and information for regional communities. This indicates that Facebook is now not only crucial for maintaining relationships with friends and

family, but also as a mechanism for social connection to the whole community. As such, it is possible that Facebook has been integrated into regional communities and now provides access to social connection and social support to a majority of regional users.

Another implication is that while Facebook can be used to supplement decreased opportunities for social interaction (Gilmour et al., 2019; Indian & Grieve, 2014), it is not preferred to traditional face-to-face social connection and social support. While the participants all described using Facebook to stay in contact with friends and family, it was noted that Facebook was a way to organise face-to-face social interactions. This further cements the notion that Facebook is a crucial utility in regional communities, but is not seen as the preferred method of social interaction. This is not unexpected, as it has been found that individuals with high levels of face-to-face social support will not utilise Facebook as their primary means of social interaction (Cole et al., 2017; Gilmour et al., 2019; Indian & Grieve, 2014).

The third implication is that, while participants were generally positive about Facebook in general, there were several negative elements noted that related to t Facebook use. Participants reported some users can be intentionally negative towards others on the local Facebook Pages and from previous research it is clear this type of negative social interaction online can lead to decreased feelings of social connection and social support via Facebook (Callaghan et al., 2015; Moore et al., 2012; Whittaker & Kowalski, 2015). Additionally, participants noted that passive scrolling through their Facebook Newsfeed can lead to a feeling of passive social involvement, which created a feeling of false social connection. Active Facebook use has been associated with increased levels of social connection and social support (Burke et al., 2010; Shaw et al., 2015; Verduyn et al., 2015).

However, passive Facebook use has been associated with lower levels of social connection and support, as well as increased symptoms of mental health concerns (Burke et

al., 2010; Shaw et al., 2015; Verduyn et al., 2015). An additional concern is the inability to detect tone and emotional content within text-based Facebook communication. The difficulty in understanding tone in computer mediated communication has been associated with increased anxiety (Fleuriet et al., 2014; Kraut et al., 2001), however, the use of emoticons has been found to improve the clarity of tone (Eberl et al., 2020).

There are some limitations to this research. Firstly, while this study captured active Facebook users in regional communities, there was not a similar sample of non-Facebook users. Incorporating non-Facebook users would allow researchers to examine how regional Australians without a Facebook presence maintain social connections and access social support. Future studies could explore this difference. Additionally, only one-third of the sample was male, whereas the number of male-to-female Facebook users is closer to being evenly split (Statistica, 2019, 2020). This presents a limitation in two ways: female users will engage in both more active and passive Facebook use than males (McAndrew & Jeong, 2012; Sheldon et al., 2011; Simoncic et al., 2014). Additionally, women often report higher levels of social connection and social support than men (Lee & Robbins, 2000; Taylor, 2011). As such, the data in this study would be biased towards individuals with greater social networks. Additionally, there could be a difference in motivations and engagement with Facebook across genders that this study would not have sufficient data to explore, presenting an opportunity for future research. Another limitation to note is the use of the researchers' personal social network for recruitment. It has been noted that using such a network can create bias, as an individual's social networks will often be homogenous (Gelinas et al., 2017). Finally, this study focused on individuals living in regional Australia, but did not incorporate a sample of Australians living in remote or very remote communities. Given that distances between individuals and populations centres, and the size of that population centre

can affect levels of perceived social support (Koopman et al., 2001; Lauckner, 2016), exploring the role of Facebook in these communities may be required.

In conclusion, this study explored the motivations and means of engagement with Facebook by a sample of regional Australians, an important population to focus on given the documented increased associated mental health challenges faced by this population compared with their metropolitan dwelling counterparts. The themes identified in this study show that Facebook has become a crucial part of regional communities, and is utilised on both the individual level, and by the wider community. The use of local Facebook Pages as a community message board, as well as the use of Facebook Messenger as a communication utility, shows that some individuals in regional areas have adopted Facebook as a major social component of their communities. Overall, the flexibility of Facebook provides users with access to a wider range of information and support, as well as a direct means of communicating distant friends and family, something that may be particularly central for individuals living outside of metropolitan hubs.

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Chapter 7: General Discussion and Conclusion

Support from an individual's social networks is often perceived as being essential to an individual's health and well-being. The greater the level of social support an individual perceives they can draw upon, the more likely health outcomes are to be positive. Prior to the development of computer-based communication, research into social support was primarily focused on interpersonal interactions. However, as online social interactions have become a part of everyday life, it has been found that individuals can feel supported via computer-mediated communication (Grieve et al., 2013; Indian & Grieve, 2014). There has been a large amount of research that examines the effects of social support drawn from dedicated social networking sites, such as Facebook, and the effects this can have on health (Indian & Grieve, 2014; Zhang, 2017). Facebook is currently the largest dedicated SNS, and has billions of active users around the world, with most Australians also using Facebook regularly (Crowling, 2016; Facebook, 2020; Sensis, 2017; Statistica, 2020). SNSs like Facebook have become a fixture in modern life and it is therefore important to understand if these sites can provide an augmentation of regular, face-to-face social support.

This chapter will be an overview of the research conducted in this thesis and provide a discussion on the findings for each study and their collective contribution as a program of research. Additionally, the unique contributions to the literature of each study, as well as of the thesis will also be explored. Finally, the implications, limitations, and future research direction drawn from this thesis will be discussed.

Aims and research questions

Overall, this thesis aimed to explore the effects of Facebook-based social support on health across two geographically distinct populations: metropolitan and regionally based Australians, and further examine the motivations and methods of Facebook engagement of regional Australians specifically. High levels of social support have been shown to lessen the

impacts of disease, reduce the symptoms of mental illness, and increase feelings of well-being (Cobb, 1976; Cohen & Wills, 1985; Li et al., 2015; Taylor, 2011). This can be in both the context of buffering an individual from the negative effects of stress on health, as well as directly effecting health outcomes (Cohen & Wills, 1985; Taylor, 2011). Both of these effects has been shown to occur in both the context of face-to-face social support as well as social support drawn from Facebook (Cole et al., 2017; Indian & Grieve, 2014).

The research into Facebook-based social support has found that increased social support drawn from Facebook can improve health and well-being, and decrease the symptoms of physical and mental illness (Frison & Eggermont, 2015; Kim & Lee, 2011; Nabi et al., 2013; Wright et al., 2013). It has also been found that Facebook-based social support can be drawn upon when an individual experiences reduced opportunities for face-to-face social support (Cole et al., 2017; Indian & Grieve, 2014). However, there have been several limitations identified with this previous research that could be addressed. It has previously been noted in this thesis (see Chapters 2 and 3) that there is an overreliance on undergraduate samples within the literature and a lack of studies that examine the effects of Facebook-based social support on geographically diverse samples.

To address these limitations, as well as to systematically examine the conclusions of the Facebook-based social support literature, three research questions were proposed in this thesis. An evaluation of the findings, and a discussion of their implications will now be provided. Each research question will be examined in turn.

Research Question 1: Does the Academic Literature Indicate that Social Support Drawn from Facebook Translates into Positive Physical or Mental Health Outcomes?

The first research question asked “Does the academic literature indicate that social support drawn from Facebook translates into positive physical or mental health outcomes?” To answer this question, the methodology of the first study was a systematic review of the

extant literature. As no existing systematic literature review of the effects of Facebook-based social support on health was located, this research methodology was appropriate for answering the first research question. Utilising key search terms from the existing Facebook-based social support literature and using the PRISMA method of rigorously searching and data extraction, 27 studies were examined. As shown in Chapter 3, the effects of Facebook-based social support were found to impact three distinct areas of health: general health, mental illness, and well-being.

Studies that focused on the effects of Facebook-based social support and general health fell into to two broad categories: general physical health, and general mental health. It was found that the previous literature indicated greater levels of Facebook-based social support was beneficial for general physical health, and health related behaviours. Additionally, it was found that higher levels of Facebook-based social support were associated with better mental health outcomes, including reduced life stress and mental distress, and improved life satisfaction and outlook.

These results are not unexpected and are consistent with the existing models of face-to-face social support (i.e., the buffering, and direct effect hypotheses). As with face-to-face social support, higher levels of Facebook-based social support appears to provide positive physical and mental health outcomes for users (Frison & Eggermont, 2015; Kim & Lee, 2011; Nabi et al., 2013; Wright et al., 2013). Additionally, Facebook appears to provide users with access to a peer-support network when engaging with positive health related behaviours, like exercise or seeking health services. Given the instant nature of SNSs, feedback and support via Facebook has the potential to be accessed more easily and efficiently than seeking out traditional face-to-face social support.

Studies that examined the effects of Facebook-based social support on mental illness symptomology found that increased levels of Facebook-based social support predicted lower

levels of depression and loneliness. Additionally, it was found that persons with higher levels of social anxiety were more likely to draw on Facebook for social support, rather than face-to-face interaction. Facebook-based social support did offset the effects of online victimisation, though offering support to victimised peers could lead to vicarious traumatisation. Finally, it was found that higher levels of information support (i.e., advice or feedback) was predictive of higher levels of Facebook addiction, whereas higher levels of social companionship predicted lower levels of Facebook addiction.

These findings present a number of points for discussion. First, greater levels of Facebook-based social support appear to reduce feelings of loneliness and isolation, and lowers the effects of depressive states. Given the social nature of Facebook, it makes sense that individuals who feel lonely would be able access a virtual digital social circle for support when they are feeling isolated. This appears to be true for persons with higher levels of social anxiety, which has been shown to lead to feelings of loneliness and isolation (Indian & Grieve, 2014). Second, while Facebook-based social support can buffer at-risk individuals from the effects of online victimisation, providing support to peers can lead to increased mental distress. This means that, while the victim feels supported by their online social circle, the individuals providing support can experience adverse effects on behalf of the victim (McConnell et al., 2017). Finally, increased levels of informational support on Facebook can lead to Facebook addiction, whereas feelings of companionship online appear to reduce the likelihood of such an addiction. This is likely related to motivations for using Facebook, with individuals who see Facebook use as a recreational activity, rather than an informational resource, being more likely to have healthy social media habits (Tang et al., 2016).

It was generally found that greater levels of Facebook-based social support predicted increased feelings of well-being and life satisfaction. There was however one notable exception: the utility of Facebook-based social support was low when compared to face-to-

face social support (Cole et al., 2017). While it was generally found that Facebook-based social support was beneficial to well-being, these results do raise some interesting points about the overall utility of Facebook-based social support.

While higher levels of Facebook-based social support do appear to predict greater life satisfaction and lower mental distress, it does appear to be situation specific. Individuals with reduced inclination or opportunities to drawn on face-to-face interactions for support appear to find some utility in Facebook-based social support. However, if an individual has strong interpersonal support, the utility of Facebook as a means of social support is reduced. This could mean that individuals who are socially or geographically isolated will use Facebook to augment their social interactions.

Interestingly, it was also found that providing support to other Facebook users can be detrimental to well-being. This result, similar to the result found for online victimisation, could mean that providing online support to individuals in distress or in need of support is a source of stress. This could be due to the nature of online interactions, where it is more difficult to interpret nonverbal signals like tone (Chen & Li, 2017). This would mean that an individual providing support devotes greater emotional resources to interpreting messages and providing emotionally supportive responses (Chen & Li, 2017).

The findings of Chapter 3 show that social support drawn from Facebook translates into positive physical and mental health outcomes, however, there were no studies that examined the effects of Facebook-based social support across two distinct geographical communities. The majority of studies reviewed in Chapter 3 drew on samples of undergraduate students or were focused in metropolitan areas. From this review of the Facebook-based social support literature, no definite conclusions can be drawn on the effects of social support drawn from Facebook on regional and metropolitan-based users. As such,

an examination of the effects of Facebook-based social support was conducted in Chapters 4 and 5.

Research Question 2: Does Social Support Drawn from Facebook Improve Health for both Regional and Metropolitan Australians?"

The second research question asked "Does social support drawn from Facebook improve health for both regional and metropolitan Australians?" To best answer this question, a cross-sectional quantitative methodology was used, which resulted in two articles (Chapters 4 and 5). Both studies utilised the same sample of Australian Facebook users from both regional and metropolitan communities. Drawing on the findings of Chapter 4, the participants completed measures of Facebook-based social support, Facebook use, physical illness, mental illness, and life satisfaction. Participants also included their demographic information, and postcode, so that their regional category could be coded using the ASGS classification system (ABS, 2016). The second article drawn from this study also included a measure of face-to-face social support and cyberbullying. The rationale for two distinct studies was to examine the two models of social support in the context of Facebook-based social support: the buffering hypothesis and the direct effect hypothesis.

The Buffering Hypothesis

The first article drawn from Study Two, as outlined in Chapter 4, was a cross-sectional study that focused on exploring the buffering hypothesis model of social support when applied to social support drawn from Facebook. The sample was Australian Facebook users from a range of metropolitan and regional communities. The model tested the effects of stress, time spent on Facebook, and number of Facebook Friends on health concerns (dissatisfaction with life, mental distress, and physical illness), with Facebook-based social support acting as a mediator. When examined as a total sample, it was found that Facebook-based social support did reduce the effects of stress on health concerns. Additionally, it was

also found that greater time spent on Facebook had a positive relationship with increased health concerns.

The results also showed that this model of social support differed across the metropolitan and regional samples. Within the metropolitan sample, the results were largely consistent with the findings for the total sample: Facebook-based social support buffered individuals from the negative effects of stress on health. Time spent on Facebook did not have a significant relationship with health concerns. Within the regional sample, however, it was found that Facebook-based social support had no relationship with health concerns and did not buffer individuals from the effects of life stress. Time spent on Facebook did however have a positive relationship with participants' health concerns.

This finding partially supports the hypothesis that there would be differences in how geographically-diverse communities would utilise Facebook-based social support, just not in the predicted way. It has been suggested that people in more geographically isolated communities would use Facebook as a means of supplementing social support due to reduced opportunities for face-to-face social interactions (Indian & Grieve, 2014). This appears to not be the case, with the reverse being found.

The Direct Effects Hypothesis

The second article drawn from Study Two, as outlined in Chapter 5, aimed to examine the direct effects hypothesis, as it applies to Facebook-based social support. The study was also cross-sectional in nature and examined the effects of Facebook-based and face-to-face social support, as well as cyberbullying, on health outcomes (mental distress, life satisfaction, and physical illness). To achieve this, the sample of Australian Facebook users was divided into metropolitan and regional Facebook users, with 3 hierarchical regressions being performed on the data from each group. The first step included a series of control variables, including gender, age, employment status, Australian citizenship status, marital status, length

of residence in the area, and Facebook intensity. The second step included the social support and Facebook communication variables (i.e., face-to-face and Facebook-based social support, and cyberbullying on Facebook). This way the unique variance of each variable, as well as the model change for these variables could be reported.

The results showed that, within the metropolitan sample, greater Facebook-based social support had a relationship with lower mental distress. Additionally, face-to-face social support had a relationship with greater life satisfaction, and lower mental distress, but did not have a relationship with physical illness rates. Finally, greater reported levels of cyberbullying had a negative relationship with life satisfaction, and a positive relationship with mental distress, but did not appear to influence physical illness. Conversely, within the regional sample, Facebook-based social support did not appear to have an effect on any of the health outcomes. However, greater levels of face-to-face social support was associated with greater life satisfaction, and lower levels of mental distress and physical illness. Greater levels of cyberbullying were also associated with greater mental distress.

These results, similar to the results of the first article examining the buffering hypothesis, show that Facebook-based social support does not appear to provide a direct effect on health outcomes for regional Australians. Additionally, when evaluated with face-to-face social support, increased levels of Facebook-based social support appear be associated with lower mental distress and have no effect on life satisfaction or physical health. The results of both Chapters 4 and 5 raise several interesting points for discussion.

First, when taken in the context of either the buffering hypothesis or direct effects hypothesis models of social support, Facebook-based social support does not appear to affect health outcomes in regional Australians. This runs counter to the hypotheses proposed in both analyses. It was hypothesised that regional-based individuals with poor face-to-face social support will attempt to use Facebook to supplement for low opportunities or inclination to

access interpersonal support, however, there was no significant difference in face-to-face social support across both samples. It is worth noting that the levels of Facebook-based social support reported by the regional sample were significantly lower than that of the metropolitan sample. This could mean that, while metropolitan communities are utilising Facebook as an additional means for social support, this has not occurred in regional communities.

Additionally, the results of Chapter 5 showed that cyberbullying was associated with increased levels of mental distress in both samples. However, the reported levels of cyberbullying were significantly higher in the regional sample than in the metropolitan sample. While Facebook-based social support does buffer an individual from the negative effects of cyberbullying, providing support to individuals experiencing cyberbullying can reduce the levels of perceived social support from Facebook McConnell et al., 2017). When examined in the context of LGBTQI young adults, offering support to peers who were experiencing victimisation, it was found that providing support was associated with greater level of mental distress (McConnell et al., 2017). It is possible that experiencing or observing cyberbullying on Facebook may be moderating the effect of Facebook-social support on health outcomes, however, cyberbullying, and its effects on Facebook-based social support have yet to be fully examined within the literature. It is also worth noting that seeking social support when being victimised was not associated with mental distress (McConnell et al., 2017). These results should be interpreted with caution, as only a single examining cyberbullying and Facebook-based social support was found in the literature.

Finally, in the results of Chapter 4, time spent on Facebook had a significant positive indirect effect on mental distress, physical illness, and life dissatisfaction in the regional sample. Facebook overuse has been associated with poor health outcomes, including lower levels of physical exercise, and increased rates of depression and anxiety (Barkley & Lepp, 2016; Frost & Rickwood, 2017). However, follow-up analyses indicated that the reported

amount time spent on Facebook per day did not significantly differ across the regional and metropolitan samples. Following on the findings about cyberbullying found in Chapter 5, this might suggest that regional Facebook users are exposed to more negative online social interaction during their time spent on Facebook, which can adversely affect their overall health.

When examined in the context of the two models of social support, the results of Chapter 4 and 5 show mixed support for both of these hypothesis. In the regional sample, Facebook-based social support did not provide either a direct effect, or a buffering effect on health. However, it is important to note that in Chapter 5, face-to-face social support did provide a direct effect on the health outcomes. This could be due to the regional sample not engaging with Facebook as a form of SNS, but rather as a communications utility, resulting in neither social support hypothesis providing effects on health.

In the metropolitan sample, Facebook-based socials support provided a buffering effect on the health outcomes, but only provided a direct effect on mental distress. The direct effect has found to provide the best explanation for social support when examined in the context of mental distress and depression (Che et al., 2018; Turner & Brown, 2010). Also of note, face-to-face social support did not provide a direct on physical health in the metropolitan sample. This is an unusual result, and may be due to the disparity in physical health outcomes across geographic locations (AIHW, 2016; Bourke et al., 2012; Kelly et al., 2010). The metropolitan sample showed less physical health concerns than the regional sample, possibly resulting less need for social support to offset these concerns,

The results of both Chapters 4 and 5 showed that, while the metropolitan-based samples did appear to benefit from the social support drawn from Facebook, the regional samples showed no association between Facebook-based social support and health concerns. In order to explore this difference, a more in-depth exploration of the Facebook habits of

regional Australians needed to be conducted. As such, the third study was conducted as a series of semi-structured interview with regional Australian Facebook users.

Research Question 3: How do Regional Australians Describe Their Use of Facebook as a Mechanism for Accessing Social Support?

Drawing on the findings from Chapters 4 and 5, which found that Facebook-based social support had no significant effect on health outcomes in regional communities, a qualitative research question was developed ("How do regional Australians describe their use of Facebook as a mechanism for accessing social support?"). To answer this question, a series of semi-structured interviews with 15 regional Facebook users were undertaken. Ten female and five male Facebook users from both Inner and Outer Regional Areas of Queensland and New South Wales were interviewed for this study. The third study utilised a thematic analysis of the data created in the interviews and was outlined in Chapter 6.

The findings identified three themes that related to the individual's feelings and motivation about using Facebook, and one theme that related to the wider regional community's engagement with Facebook. The individual themes were 'motivations for using Facebook', 'Facebook Messenger as a utility', and 'Facebook vs. face-to-face interactions'. The wider regional community theme was 'Facebook as the local community message board'.

Overall, it was found that three motivations for using Facebook were most reported by the interviewees: consuming time on Facebook, using Facebook as a news source, and using Facebook to stay in contact with friends and family. Using Facebook to consume time or as a recreational tool has been described in other samples, ranging from university students to general samples of adult metropolitan-based Facebook users (Special & Li-Barber, 2012; Tosun, 2012). This is unsurprising, given the wide range of mechanisms that Facebook provides to users, including engagement with public posts and pages, games, and direct

private social interactions (Nadkarni & Hofmann, 2012). Facebook has also previously been found to be many users' primary source of news, with many users reporting that they get their news exclusively from Facebook (Kümpel et al., 2015; Müller et al., 2016). Finally, using Facebook to stay in contact with friends and family has also been found to be a primary motivation for using Facebook in other samples. This motivation is most closely aligned with Facebook's status as a SNS.

The use of Facebook Messenger as a communication utility in regional communities was consistent across all interviewees. Facebook Messenger allows for direct, private messages between users or groups of users, and can be used to send textual communication, photos, videos, or non-verbal forms of CMCs, like emojis or gifs, as well as direct calls (Eberl et al., 2020; Nadkarni & Hofmann, 2012). Given that most participants described that the majority, if not all, of their social circle were on Facebook, and that they used this function on smartphones, this is unsurprising. The Facebook Messenger application, which is available across all smartphone operating systems, would function as a private universal communication method for almost the entirety of the user's social circle (Eberl et al., 2020; Nadkarni & Hofmann, 2012; Sood, 2019).

The interviewees described finding face-to-face social interactions as more emotionally fulfilling and desirable than Facebook-based communication. While Facebook was positively regarded for its easy means of accessing social support, and its use to stay in contact with friends and family, there were several negatives noted in using Facebook. Participants noted that there can be difficulties in understanding tone when using Facebook-based communication, which has previously been found to increase stress associated with online interactions (Fleuriet et al., 2014; Kraut et al., 2001). Additionally, the interviewees noted that passive Facebook use (i.e., scrolling passively through their Facebook Newsfeed) created a false feeling of connection. Passive Facebook use has previously been associated

with decreased feelings of social connection (Burke et al., 2010; Shaw et al., 2015; Verduyn et al., 2015). Finally, many interviews noted that public Facebook posts had a positive bias, creating a "highlight reel" effect.

The final theme related to the wider regional community engagement with Facebook, i.e., the use of local Facebook Pages. The interviewees described the local Facebook Pages as good sources of information about the local area. Many of these Facebook Pages were set up and run by members of the local community and were used as a form of a local community message board. Many interviewees described these Facebook Pages as fostering a sense of community. However, almost all interviewees noted that a number of the local users would engage in intentional negative social interactions on these sites, leading to the perception of cyberbullying on many local Facebook Pages. These findings present several interesting points for discussion.

Firstly, Facebook, and especially Facebook Messenger, appears to be incredibly important as a means of communication in regional communities. Given the large range of communication mechanisms that are available through both the public Facebook application (Sood, 2019), and the private Facebook Messenger application, it is likely that Facebook has supplanted more traditional forms of communication, like telephone or texting. Additionally, as Facebook is the most popular SNS, with 91% of Australian social media users having an active account, this would provide users access to much of their social network (Crowling, 2016; Sensis, 2017).

Second, the intentional negative social interactions noted on the local Facebook Pages could have an adverse effect on the potential benefits of using Facebook as a mechanism for social support. As previously noted in Chapter 5, levels of cyberbullying were found to be significantly higher in the regional sample. It is possible that the use of these local Facebook Pages to access local news and information about a user's local community might expose

them to higher levels of vicarious cyberbullying. If these pages are more commonly utilised in regional communities, this could explain the increased levels of cyberbullying found in the regional sample. As cyberbullying has been found to decrease perceptions of Facebook-based social support (Cole et al., 2017; McConnell et al., 2017), this exposure to higher levels of intentional negative social interactions could be mediating the effect of Facebook-based social support on health.

Finally, all interviewees noted that face-to-face social interactions were more rewarding and created greater feelings of connection and support than interacting via Facebook. Beyond this, many participants described using Facebook to augment their social interactions and to organise face-to-face social events. Given that Facebook-based social support's effect on health is strongest in individuals with low levels of face-to-face to social support (Cole et al., 2017; Indian & Grieve, 2014; Kim, 2014), it is possible that individuals with high levels of face-to-face social support might only engage with Facebook to maintain relationships and organise face-to-face interactions. Alternatively, it is possible that regional users have yet to engage with Facebook as means of direct, online socialising, preferring to engage with the SNS as a utility that can be used as a social communication and organisation tool.

Drawing on the findings of all three of the studies conducted in this thesis, several conclusions can be drawn. First, the pre-existing Facebook-based social support literature indicated that social support drawn from Facebook can be beneficial to health outcomes, however, a number of limitations were noted around samples used in these studies. Second, while Facebook-based social support does appear to be beneficial to health outcomes for metropolitan users, this relationship does not appear to occur in regional Facebook users. Finally, when examining the thoughts and feelings of regional Australians about Facebook, it

appears that Facebook is used more as a communication utility than a method of accessing social support.

Unique Contributions to Knowledge and Implications for the Current Research

This thesis has provided a number of unique contributions in understanding the effects that social support drawn from Facebook can have on health outcomes. To the best of the author's knowledge, this is the first time a systematic review of the Facebook-based social support literature has been performed and synthesised. By systematically examining the wider scientific literature as it relates to the effects of Facebook-based social support on health outcomes, this review will provide an overview of this research so far and an important check on the status of current research knowledge within this field. This systematic review also provides researchers with recommendations for future studies, as well as provides a broad view of the research for more nuanced understanding of Facebook-based social support.

Additionally, this is the first time that a comprehensive project examining Facebook-based social support across two specific geographic communities has been conducted. While it has been hypothesised that different geographical communities might engage with Facebook-based social support differently (Indian & Grieve, 2014), this is the first time (to the author's knowledge) that a dedicated examination of these effects has been attempted. The overall hypothesis of this thesis (i.e., that Facebook-based social support would have a stronger effect on health in regional Australians) did not appear to be supported by the results of the Chapters 4 and 5. Interestingly, the findings of Chapter 6 do show that regional Australians are engaging with Facebook very strongly. The reported use of Facebook Messenger by individuals, and of local Facebook Pages by the wider communities, show that Facebook is being used to communicate and engage with social networks. This raises the question: 'why Facebook-based social support did not affect health outcomes in the regional

sample in Chapters 4 and 5?'. The results of the third study provide a possible explanation as to why.

As previously reported above, the findings of Chapter 6 highlighted that many of the regional Facebook users viewed Facebook Messenger as a communication utility rather than a mechanism for socialising online. Additionally, many regional users reported utilising Facebook to organise face-to-face social interaction, which they found more rewarding. And finally, the local Facebook Pages were noted as a good source of informational (i.e., practical problem-solving assistance) and tangible support (i.e., offers of material assistance). None of the regional users interviewed discussed using Facebook to express or receive emotional support. As discussed in Chapter 3, emotional support is the type of Facebook-based social support most strongly associated improving health outcomes (Cavallo et al., 2014; Oh et al., 2013; Seo et al., 2016; Wright, 2012). The idea that members of regional communities view Facebook as utility and a source of information, and not as mechanism for emotional support, might explain the results of Chapters 4 and 5. This would also suggest that education on how to use social media in a healthy way may need to vary across geographical communities.

An additional consideration for regional Facebook users, drawn from the findings of this thesis, is the effect of intentional negative social interactions via Facebook. In Chapter 5 it was noted that reported levels of cyberbullying were significantly higher in the regional sample. Additionally, in Chapter 6, the interviewees remarked that some members of the local Facebook Pages would engage in intentionally negative communication styles. This would suggest that many regional Facebook users, particularly those who engage with local Facebook Pages, may be exposed to higher levels of cyberbullying than their metropolitan-based counterparts, and might affect the use of Facebook as a mechanism for social support. These results would suggest the need for increased education and public awareness in regional communities around the dangers of cyberbullying.

There are also major theoretical implications for social support which can be drawn from this thesis. Both theoretical models of social support (i.e., the buffering, and direct effect hypotheses) were examined in the context of Facebook-based social support. While there was some evidence that supported both models when applied to Facebook use in metropolitan samples, these models of social support were not supported in the regional samples. As both models, when applied to Facebook, have found support in previous studies (Frison & Eggermont, 2015; Nabi et al., 2013), this would suggest a need to control for location and different types of Facebook use when examining Facebook-based social support in geographically-diverse samples.

Regional Australian communities experience higher levels of negative mental and physical health outcomes, like depression, anxiety, drug and alcohol misuse, and cancer survivorship (AIHW, 2016, 2019b; Bourke et al., 2012; Kelly et al., 2010). Social support can both buffer an individual from the negative effects of life stress on health, and provide a direct effect for reducing negative health outcomes (Cohen & Wills, 1985; Taylor, 2011). As such, had the overall hypothesis for this thesis been supported more strongly, this would have provided a strong rationale for encouraging regional Australians to engage with forms of online social support, like Facebook. However, the overall results of thesis show that the evidence for the usefulness of Facebook-based social support in these communities is not strong, and the factors around the use of Facebook as a mechanism for social support are more complex across geographical locations.

Limitations and Future Directions

It is worth noting that there are some limitations associated with this research. The first being that there was no comparison group of non-Facebook users in any of the studies that recruited participants. This is probably most pertinent for Chapter 6, in which regional non-users could have been interviewed to explore how regional persons without Facebook

engage with their social circle, and the wider community. This would have allowed for a more comprehensive evaluation of the overall means of socialising in regional communities. This presents an interesting future direction for study.

Additionally, as noted in Chapters 4 and 5, there is a disparity in internet availability across regional communities, with persons in regional communities experiencing limited or slower internet speeds (Alam et al., 2019; Fleming et al., 2020; Park, 2017). This issue is not consistent across all regional communities, with some regional communities having reliable internet availability and speeds that are similar to major metropolitan areas (Alam et al., 2019; Fleming et al., 2020; Park, 2017). As such, it is possible that not all regional users had the same level of internet availability and access. This is a potential confounding variable and should be considered in future studies that examine online activity in regional areas.

Another consideration is the ever-changing nature of Facebook as a SNS. Facebook is an evolving SNS, and has made a number of changes to the ways in which users can communicate with each other. Most notably, Facebook has added varying emotional responses (i.e., emojis) to posts, comments, and messages, allowing for more focused emotional cues to users (Eberl et al., 2020; Nadkarni & Hofmann, 2012; Sood, 2019). The addition of video chat on Facebook Messenger would also allow users a more varied form of communication (Sood, 2019). Video chat has been found to increase feelings of greater social connection than just text-based communication (Abrams et al., 2015; West et al., 2019). Finally, Facebook has an algorithm that can change or even manipulate what content is seen by the user (Bakir & McStay, 2018; DeVito, 2017). As negative emotional content has been found to be more emotionally salient than positive emotional content on social media (Bakir & McStay, 2018), it is possible that Facebook users are more likely to engage with, and remember, negative content.

An additional limitation is the use of self-report measures in the second study. The use of self-report in psychological studies can result in responses that do not accurately reflect feelings or behaviour, due to a desire to appear more socially positive (Northrup, 1997; Wang, 2015). This might especially be true when participants reported levels of mental distress, or Facebook use.

Additionally, in all of the studies presented in this thesis, there was an overrepresentation of female participants. Generally, there appears to be little difference in the rates at which males and females use Facebook (Statistica, 2019, 2020). This overrepresentation of female participants presents two limitations with this thesis. First, when compared to men, women report greater levels of perceived social support and connection (Lee & Robbins, 2000; Taylor, 2011). Additionally, female Facebook users will engage with Facebook at greater levels than male users (McAndrew & Jeong, 2012; Sheldon et al., 2011; Simoncic et al., 2014). These differences could present an issue with the generalisability of the results found in this thesis, as the majority of the samples will be feel more supported, and generally engage with Facebook more.

An additional limitations for Chapter 5 is that of sample size. The regional sample was comprised of only 156 participants, which would present little difficulty in detecting large-to-moderate effect sizes (Kline, 2011). However, such a small would present an issue in detecting small effect sizes when using a hierarchical regression (Kline, 2011).

It is also worth noting that the quantitative component of this thesis (Chapters 4 and 5) did not control for participants'' use of other SNSs. More than 60% Australian Facebook users also use one or more additional SNSs, such as Twitter or Instagram (Statistica, 2019, 2020). This could mean that, in additional to Facebook, these users are engaging with other means of online social support. An examination of the overlap or redundancy of using multiple SNSs for social support could present an interesting direction for future research.An

additional direction for future research is the examination of the differing understanding of community and social support that may exist across metropolitan and regional communities. Regional Australian residents have been noted to give a greater focus to local community and regional collective identity than their metropolitan counterparts (Kashima et al., 2004). It is likely that the definitions or understanding of social may vary across these communities. As such, a future direction for research could be exploring the epistemological differences in social connection and community across these communities.

Finally, while this research focused on individuals who live in regional areas, there is still a subset of the Australian population who live in remote or very remote areas. Approximately 3% of Australians live in these very geographically isolated communities (ABS, 2016). It would stand to reason that these communities might also be using Facebook to engage with their local area specifically, and the outside world more generally. An evaluation of the effect of Facebook-based social support on health outcomes for these communities may present an important direction for research. Additionally, a qualitative evaluation of their social habits, both online and in person, would be an additional consideration for future research.

Conclusions

Overall, this thesis aimed to explore the effects of social support drawn from Facebook on health outcomes across regional and metropolitan communities, as well as explore the motivations and means of engagement with Facebook of regional users. A systematic review of the literature found that higher levels of Facebook-based social support was associated with lower levels of depression, anxiety, and loneliness, as well as greater levels of life-satisfaction and well-being. It was also found that Facebook-based social support did buffer individuals in metropolitan communities from the negative effects of life stress, but this did not occur in for regional Facebook users. Additionally, it was found that

Facebook-based social support for regional users did not have a unique direct effect on physical and mental health concerns, over the effects of face-to-face social support. However, greater Facebook-based social support was associated with lower levels of mental distress for metropolitan users.

While the health benefits of using Facebook as a mechanism for social support were not found for regional users, it is important to note that Facebook does play an important role in regional life. Regional users appear to use Facebook as a communication utility, and as a local news source. Facebook appears to have become both a direct method of communication, and a local community message board in regional communities. By exploring and developing the understanding of the role that Facebook plays in regional communities, will allow future research to explore the impact that this SNS has had on the social fabric of regional Australia and on the individual end user.

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Appendix A

Study One Materials

Newcastle-Ottawa Scale adapted for cross-sectional studies

Selection: (Maximum 5 stars)

1. Representativeness of the sample:
    a. Truly representative of the average in the target population. * (all subjects or random sampling)
    b. Somewhat representative of the average in the target group. * (non-random sampling)
    c. Selected group of users/convenience sample.
    d. No description of the derivation of the included subjects.

2. Sample size:
    a. Justified and satisfactory (including sample size calculation). *
    b. Not justified.
    c. No information provided

3. Non-respondents:
    a. Proportion of target sample recruited attains pre-specified target or basic summary of non-respondent characteristics in sampling frame recorded. *
    b. Unsatisfactory recruitment rate, no summary data on non-respondents.
    c. No information provided

4. Ascertainment of the exposure (risk factor):
    a. Vaccine records/vaccine registry/clinic registers/hospital records only. **
    b. Parental or personal recall and vaccine/hospital records. *
    c. Parental/personal recall only.

Comparability: (Maximum 2 stars)

1. Comparability of subjects in different outcome groups on the basis of design or analysis. Confounding factors controlled.
    a. Data/ results adjusted for relevant predictors/risk factors/confounders e.g. age, sex, time since vaccination, etc. **
    b. Data/results not adjusted for all relevant confounders/risk factors/information not provided.

Outcome: (Maximum 3 stars)

1. Assessment of outcome:
    a. Independent blind assessment using objective validated laboratory methods. **
    b. Unblinded assessment using objective validated laboratory methods. **
    c. Used non-standard or non-validated laboratory methods with gold standard. *
    d. No description/non-standard laboratory methods used.

2. Statistical test:

a. Statistical test used to analyse the data clearly described, appropriate and measures of association presented including confidence intervals and probability level (p value). *
b. Statistical test not appropriate, not described or incomplete.

Cross-sectional Studies:
Very Good Studies: 9-10 points
Good Studies: 7-8 points
Satisfactory Studies: 5-6 points
Unsatisfactory Studies: 0 to 4 points

This scale has been adapted from the Newcastle-Ottawa Quality Assessment Scale for cohort studies to provide quality assessment of cross sectional studies[1].

[1] Herzog R, et al. Is Healthcare Workers' Intention to Vaccinate Related to their Knowledge, Beliefs and Attitudes? A Systematic Review. *BMC Public Health* 2013 **13**:154

Appendix B

Study Two Materials

University of Southern Queensland

Participant Information for USQ Research Project Questionnaire

Project Details

Title of Project:	The utility of Facebook-based social support in Australian metropolitan, regional and remote communities.
Human Research Ethics Approval Number:	H18REA134

Research Team Contact Details

Principal Investigator Details

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Description

This project is being undertaken as part of a PhD Project.

The purpose of this project is to investigate the use of the social networking site Facebook as a mechanism for social support to improve physical and mental health outcomes for persons in metropolitan, regional, and remote locations.

The research team requests your assistance because you currently reside in Australia, and have an active Facebook account.

Participation

Your participation will involve completion of an online questionnaire that will take approximately 30 minutes of your time.

Questions will include themes around Facebook usage (e.g. how often you use Facebook), social support (e.g. how much support you feel you have access to), mental health (general life satisfaction, and mental health concerns), physical health (e.g. how often you feel ill), and place attachment (how connected to your community you feel).

Your participation in this project is entirely voluntary. If you do not wish to take part, you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage until data analysis has commenced. You will be provided with a Survey ID Code and a Participant ID Number upon the completion of this survey. If you wish to withdraw from this study, you can email the Research Team at any time with these numbers, and your responses will be removed and deleted. The Participant ID Number is confidential. If you have any concerns, or wish further information please contact the Research Team (contact details at the top of this form).

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland or any member of the Research Team.

Expected Benefits

It is expected that this project will not directly benefit you. However, it may benefit Australian Facebook users from a wide range of communities. This research would also provide a much-needed window into the online behaviours of Australians who live in regional and remote communities, and provide implications for future research and educational programs to improve social support for at-risk for metropolitan, regional, and remote populations.

USQ student participants will receive course credit for participation, where applicable.

Risks

This survey may take around 30 minutes to complete (time imposition). If you know any of the research team, your decision to participate is completely anonymous and will not affect your relationship with any member of the research team. In participating in the questionnaire, there are minimal risks, such as, mild distress caused by the nature of some of the questions. Sometimes thinking about the sorts of issues raised in the questionnaire can create some uncomfortable or distressing feelings. If you need to talk to someone about this immediately please contact Lifeline on 13 11 14. USQ students may also contact USQ Student Services on (07) 4631 2372. You may also wish to consider consulting your General Practitioner (GP) for additional support.

Privacy and Confidentiality

All comments and responses will be treated confidentially unless required by law.

The names of individual persons are not required in any of the responses.

The data collected may be made available for future research purposes, relating to similar projects. The data will be stored and shared in non-identifiable form.

If you wish to receive a summary of the results of this research project, please contact any member of the Research Team.

Any data collected as a part of this project will be stored securely as per University of Southern Queensland's Research Data Management policy.

Consent to Participate

Clicking on the 'Submit' button at the conclusion of the questionnaire is accepted as an indication of your consent to participate in this project.

Questions or Further Information about the Project

Please refer to the Research Team Contact Details at the top of the form to have any questions answered or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 2214 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this sheet for your information.

For technical concerns or difficulties accessing the survey please contact Ken Askin, University of Southern Queensland, at askin@usq.edu.au.

I declare that I am:

- 18 years or over and I consent to the terms above

☐ **Click here to agree**

THANK YOU FOR YOUR PARTICIPATION

To start the survey please click on the 'Next' button below.

Facebook Advertisement

To be posted to Facebook:

Research Participants Wanted:

Are you an adult Facebook user who resides in Australia?

The University of Southern Queensland is seeking Australian-based Facebook users, aged over 18 years, for a research project that examines how persons living in different geographical communities' use Facebook for social support, and how that can affect health.

The survey will take approximately 30 minutes to complete, and includes questions around Facebook habits, mental and physical health, and social support.

Australian-based Facebook users, over 18 years of age, are invited to follow the link below for information and/or participate in this research:

<Link Here>

Your participation is anonymous and will contribute to our understanding of Facebook-based social support, and its function in Australian communities.

For more information, please contact the Principal Investigator: Mr John Gilmour (Email: John.Gilmour@usq.edu.au). (Human Research Ethics Approval Number: H18REA134)

Survey: The utility of Facebook-based social support in Australian metropolitan, regional and remote communities.

Satisfaction with Life Scale (SWLS)

Instructions: Below are five statements that you may agree or disagree with. Using the scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Slightly disagree, 3 = Neither agree nor disagree, 5 = Slightly agree, 6 = Agree, 7 = Strongly agree

In most ways my life is close to my ideal.

The conditions of my life are excellent.

I am satisfied with my life.

So far I have gotten the important things I want in life.

If I could live my life over, I would change almost nothing.

Place Attachment Scale (PAS)

These questions ask about your level of connection to the region where you live. Please indicate your level of agreement to each statement using the rating scale provided.

Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree or disagree, 4 = Agree, 5 = Strongly agree

The region where I currently live means a lot to me.

I am very attached to the region where I'm currently living.

I have a lot of fond memories about the region where I'm currently living.

The region where I currently live is very special to me.

I identify strongly with the region where I'm currently living.

I feel that the region where I currently live is a part of me.

When I spend time in the natural environment in the region where I currently live, I feel a deep feeling of oneness with the natural environment.

I would feel less attached to the region where I currently live if the native plants and animals that live here disappeared.

I learn a lot about myself when spending time in the natural environment in the region where I currently live.

I am very attached to the natural environment in the region where I currently live.

When I spend time in the natural environment in my region, I feel at peace with myself.

I get more satisfaction out of living in my current region than any other place.

No other place can compare to the region where I'm currently living.

I would not substitute any other area for the activities I do in the region where I currently live.

Doing my activities in the region where I currently live is more important to me than doing them in any other place.

The region where I'm currently living is the best place for the activities I like to do.

I live in the region because my family is here.

The friendships I have developed through my leisure activities where I am currently living are very important to me.

The friendships I have developed in the community where I live are very important to me.

I would want to stay in the region where I live now, even if it meant changing jobs, my career, or my career goals.

I would want to stay in the region where I live now, even if I was unemployed or lost my job.

If I had to leave my current region for work or study, I would want to return as soon as possible.

Depression Anxiety Stress Scale-21 (DASS-21)

Please read each statement and indicate how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

Scale: 0 = Never, 1 = Sometimes, 2 =Often, 3 = Almost always

I found it hard to wind down

I was aware of dryness of my mouth

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

I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)

I found it difficult to work up the initiative to do things

I tended to over-react to situations

I experienced trembling (e.g. in the hands)

I felt that I was using a lot of nervous energy

I was worried about situations in which I might panic and make a fool of myself

I felt that I had nothing to look forward to

I found myself getting agitated

I found it difficult to relax

I felt down-hearted and blue

I was intolerant of anything that kept me from getting on with what I was doing

I felt I was close to panic

I was unable to become enthusiastic about anything

I felt I wasn't worth much as a person

I felt that I was rather touchy

I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)

I felt scared without any good reason

I felt that life was meaningless

Interpersonal Support Evaluation List - Short Form (ISEL-SF)

This scale aims to measure how connected you feel to people you see face-to-face. This scale is made up of a list of statements each of which may or may not be true about you. For each statement check “definitely true” if you are sure it is true about you and “probably true” if you think it is true but are not absolutely certain. Similarly, you should check “definitely false” if you are sure the statement is false and “probably false” is you think it is false but are not absolutely certain.

Scale: 1 = Definitely true, 2 = Probably true, 3 = Probably false, 4 = Definitely false

If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.

I feel that there is no one I can share my most private worries and fears with.

If I were sick, I could easily find someone to help me with my daily chores.

There is someone I can turn to for advice about handling problems with my family.

If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.

When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

I don’t often get invited to do things with others.

If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).

If I wanted to have lunch with someone, I could easily find someone to join me.

If I was stranded 10 miles from home, there is someone I could call who would come and get me.

If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.

If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.

Interpersonal Support Evaluation List - Short Form for Facebook

This scale aims to measure how connected you feel to people on Facebook. This scale is made up of a list of statements each of which may or may not be true about you. For each statement check “definitely true” if you are sure it is true about you and “probably true” if you think it is true but are not absolutely certain. Similarly, you should check “definitely false” if you are sure the statement is false and “probably false” is you think it is false but are not absolutely certain.

Scale: 1 = Definitely true, 2 = Probably true, 3 = Probably false, 4 = Definitely false

If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone on Facebook to go with me.

I feel that there is no one on Facebook I can share my most private worries and fears with.

If I were sick, I could easily find someone on Facebook to help me with my daily chores.

There is someone on Facebook I can turn to for advice about handling problems with my family.

If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone on Facebook to go with me.

When I need suggestions on how to deal with a personal problem, I know someone on Facebook I can turn to.

I don’t often get invited on Facebook to do things with others.

If I had to go out of town for a few weeks, it would be difficult to find someone on Facebook who would look after my house or apartment (the plants, pets, garden, etc.).

If I wanted to have lunch with someone on Facebook, I could easily find someone to join me.

If I was stranded 10 miles from home, there is someone on Facebook I could call who would come and get me.

If a family crisis arose, it would be difficult to find someone on Facebook who could give me good advice about how to handle it.

If I needed some help in moving to a new house or apartment, I would have a hard time finding someone on Facebook to help me.

Perceived Stress Scale (PSS)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Scale: 1 = Never, 2 = Almost never, 3 = Sometimes, 4 = Fairly often, 5 = Very often

How often have you been upset because of something that happened unexpectedly?

How often have you felt that you were unable to control the important things in your life?

How often have you felt nervous and stressed?

How often have you felt confident about your ability to handle your personal problems?

How often have you felt that things were going your way?

How often have you found that you could not cope with all the things that you had to do?

How often have you been able to control irritations in your life?

How often have you felt that you were on top of things?

How often have you been angered because of things that happened that were outside of your control?

How often have you felt difficulties were piling up so high that you could not overcome them?

Cyber Bullying Victimization Experiences Measure

Please answer the following questions using the scale:

Scale: 1 = Never, 2 = Once or twice, 3 = A few times, 4 = Many times, 5 = Nearly every day

Have you received a private message on Facebook that made you upset or uncomfortable?

Has someone posted something on your Facebook page or wall that made you upset or uncomfortable?

Have you been afraid to go on to Facebook?

Has anyone posted or shared a message about you on Facebook that you didn't want others to see?

Physical Illness Measure

How many days in the last month have you felt ill?

How many days in the last month have missed work/class because of illness?

How many times in the last month have you went to a doctor or health professional for a diagnosis and/or treatment of an illness?

Several common symptoms or bodily sensations are listed below. Most people have experienced most of them at one time or another. We are currently interested in finding out how prevalent each symptom is among various groups of people.

Scale: 1 = Not bothered, 2 = Somewhat bothered, 3 = Moderately bothered, 4 = Greatly bothered

Please rate the extent to which you were bothered by each of the following health problems in the last month:

Colds

Headaches

Body aches

Over-eating

Under-eating

Extreme tiredness

Insomnia

Dental problems

Facebook Intensity Scale (FIS)

Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree or disagree, 4 = Agree, 5 = Strongly agree

Please answer the following questions using the scale:

Facebook is part of my everyday activity

I am proud to tell people I'm on Facebook

Facebook has become part of my daily routine

I feel out of touch when I haven't logged onto Facebook for a while

I feel I am part of the Facebook community

I would be sorry if Facebook shut down

Approximately how many TOTAL Facebook friends do you have?

In the past week, on average, approximately how much time PER DAY have you spent actively using Facebook?

On what device do you normally engage with Facebook the most? On a mobile phone / On a personal computer / On a computer at school/uni/work

Demographics

Do you currently reside in Australia? Yes/No

Do you have an active Facebook account? Yes/No

What is your gender? Male / Female / Prefer not to disclose/ Distinct (text)

What is your age (in years)

What type of community do you live in? Metropolitan / Inner Regional / Outer Regional / Remote / Very Remote

What is your postcode?

How far are you from the nearest town or city? I live in a town or city. / Distance (km)

How long have you lived in your current area (in years and months)?

Are you employed? Full-time / Part-time / Casual / Student / Not currently employed

What is your relationship status? Married / Divorced / De facto relationship / Single

How many children do you have?

Are you an Australian citizen? Yes / No

If no, what is your nationality?

Appendix C

Study Three Materials

University of Southern Queensland

Participant Information for USQ Research Project Interview

Project Details

Title of Project:	Facebook: A Mechanism for Social Support In Regional Communities?
Human Research Ethics Approval Number:	H18REA300

Research Team Contact Details

Principal Investigator Details

Mr John Gilmour

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Description

This project is being undertaken as part of a PhD Project.

The purpose of this project is to investigate the use of the social networking site Facebook as a mechanism for social support for persons in regional, and remote locations.

The research team requests your assistance because you currently reside in a regional, rural, or remote area of Australia, and have an active Facebook account (i.e., used at least once a week).

Participation

Your participation will involve taking part in an interview that will take approximately 60 minutes of your time.

Depending on your location, the interview will take place at a time and venue that is convenient to you or the interview will be undertaken by teleconference at a date and time that is convenient to you.

Questions will include themes around Facebook usage (e.g., how often you use Facebook), social support (e.g., how often do you talk to people in your social circle), and how that relates to Facebook (e.g., do you keep in contact with friends via Facebook).

The interview will be audio/video recorded.

Your participation in this project is entirely voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. We will provide you with the transcript of your interview so that you can review this and confirm that you are happy for this to be used, or make any edits, following the interview. You may also request that any data collected

about you be withdrawn and confidentially destroyed. If you do wish to withdraw from this project or withdraw data collected about you, please contact the Research Team (contact details at the top of this form).

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland.

Expected Benefits

It is expected that this project will not directly benefit you. However, it may benefit Australian Facebook users from a wide range of communities. This research would also provide a much-needed window into the online behaviours of Australians who live in regional and remote communities, and provide implications for future research and educational programs to improve social support for at-risk regional and remote populations. No incentive is offered.

Risks

The interview will take around 60 minutes to complete, so there is time imposition. In participating in the interview, there may be minimal risks associated with reflecting on issues of social support. Sometimes thinking about the sorts of issues raised in the interview can create some uncomfortable or distressing feelings. If you need to talk to someone about this immediately please contact Lifeline on 13 11 14 or your GP.

Privacy and Confidentiality

All comments and responses will be treated confidentially unless required by law. The interviews will be audio and/or video recorded for the purpose of transcription. Following transcription you will be provided with a copy of the interview transcript for review and endorsement prior to inclusion in the project data. There will be a two week time frame for you to review and request any changes to the transcript before the data is included in the project for analysis. It is not possible to participate in the project without being recorded.

The transcription company being utilised will be Pacific Transcription. The recordings will be provided to Pacific Transcription via their secure portal. Pacific Transcription adheres to the Australian Privacy Principles and international equivalents and conforms to

university contractor agreements. To ensure data security, Pacific Transcription provides SSL encryption for all audio and documents sent via client login.

The data collected may be made available for future research purposes, relating to similar projects. The data will be stored and shared in non-identifiable form.

If you wish to receive a summary of the results of this research project, please contact any member of the Research Team.

Any data collected as a part of this project will be stored securely as per University of Southern Queensland's Research Data Management policy.

Consent to Participate

We would like to ask you to sign a written consent form to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research Team prior to participating in your interview.

Questions or Further Information about the Project

Please refer to the Research Team Contact Details at the top of the form to have any questions answered or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 1839 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Statement of Consent

Please indicate that you:

Have read and understood the information document regarding this project.	**☐Yes / ☐No**
Have had any questions answered to your satisfaction.	**☐Yes / ☐No**
Understand that if you have any additional questions you can contact the research team.	**☐Yes / ☐No**
Are over 18 years of age.	**☐Yes / ☐No**
Understand that any data collected may be used in future research activities those related to this field.	**☐Yes / ☐No**
Agree to participate in the project.	**☐Yes / ☐No**

Participant Name	

Facebook Advertisement

To be posted to Facebook:

Research Participants Wanted:

Are you an adult Facebook user who resides in a regional area of Australia?

The University of Southern Queensland is seeking to interview Australian-based regional Facebook users, aged over 18 years, for a research project that examines how persons living in different geographical communities use Facebook for social support.

The interview will take approximately 60 minutes to complete, and includes questions around Facebook habits, and social support.

Australian-based Facebook users, over 18 years of age, are invited to email the Principal Investigator, Mr John Gilmour to express interest in taking part in this study.

Your participation is confidential and will contribute to our understanding of Facebook-based social support, and its function in Australian communities.

For more information, please contact the Principal Investigator: Mr John Gilmour (Email: John.Gilmour@usq.edu.au). (Human Research Ethics Approval Number: H18REA300).

Participant Demographic Questions

Participant Background:

Full name:

Email:

Date:

What is your age (in years)?

What is your occupation?

What is your gender?

Where do you live (suburb/town)?

How many Facebook Friends do you have?

How much time PER DAY do you usually spend on Facebook (in minutes/hours)?

Interview Questions

Instructions:

Hi, and thank you for agreeing to take part in this study on Facebook. For your upcoming interview, which should be between 30-90 minutes, it would be good if you could consider the following possible questions a day or so before the interview time. There is no limit on how long your answers can be, and if you want to provide examples of behaviour, all names and details can be removed.

Potential questions for semi-structure interviews

How often do you use Facebook?

What do you use it for?

What are your feelings towards Facebook?

How is Facebook useful to you?

How often do you post content?

How much time do you spend on Facebook?

How often do you check Facebook?

Can you tell me about how you would typically catch up with family and friends?

Can you tell me about any difficulties that you have found in trying to catch up with family and friends?

What role does FB play in helping you stay in contact with your family and friends?

Do you think improves or detracts from your socialising?

Do you organise events with friends via Facebook?

How do you use the messenger function?

Can you give me an example?

What are your thoughts about the differences between socialising on Facebook or catching up face-to-face?

Are there any negatives to using Facebook to socialise?

What do you think cyberbullying is?

Have you ever seen people using Facebook to bully or make other uncomfortable?

Can you give me an example?

Can you tell me about the social media sites that you use?

Can you tell me how you use those sites?