PLAGIARISM

DECLARATION

1. I know that plagiarism is wrong. Plagiarism is to use another's work and to pretend that it is one's own.

2. I have used the *American Psychological Association (APA)* convention for citation and referencing. Each significant contribution to, and quotation in, this essay / report / project / from the work, or works, of other people has been attributed, and has cited and referenced.

3. This essay /report /project / is my own work.

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing if off as his or her own work.

5. I acknowledge that copying someone else's assignment or essay, or part of it, is wrong, and declare that this is my own work.

SIGNATURE: Savannah Reichardt & Lauren Gardner

Does Active Facebook Use Relieve Loneliness and Increase Wellbeing in Older Adults?

Lauren Gardner and Savannah Reichardt

2020

ACSENT Laboratory
Department of Psychology
University of Cape Town

Supervisor: Kevin G. F. Thomas

Co-Supervisors: Jenny Pan, Leora Hodes

Word count:

Abstract: 299

Main text: 7997

Abstract

Aging populations and changing geographic settlement trends mean increasing numbers of older adults are deprived of regular social contact, which is a core contributor to enhancing overall mental and physical health, improving subjective wellbeing, and, particularly, alleviating loneliness. However, social media is rapidly changing the way people interact and offering increased opportunities for personal connection. Previous research suggests that active engagement (i.e., acting in ways that facilitate direct exchanges) rather than passive use (i.e., consuming content without direct exchanges) on Facebook can lead to better subjective wellbeing and decreased loneliness. This longitudinal study investigated whether older adults who used Facebook more actively than passively exhibited higher levels of subjective wellbeing and lower levels of loneliness. Each of 120 participants (age range 48–78 years) was contacted telephonically three times a day on 3 consecutive days. For each day, during each phone call (i.e., early morning, late afternoon, evening), we administered questionnaires enquiring about self-reported subjective wellbeing and loneliness. During the late-afternoon phone call we asked about Facebook activity (i.e., types of engagement, time spent on Facebook) and use of other digital media and social interaction. Lagged regression modelling indicated that, over the 3 days of data collection, subjective wellbeing and loneliness were unlikely to be affected by how active Facebook use was. Additional analyses suggested that relations between degree of active Facebook use and subjective wellbeing was mediated by the amount of time spent on Facebook. Our research contributes to knowledge about how the type of Facebook engagement (active/passive) may, over a short period of time, influence feelings of subjective wellbeing and loneliness in older adults. We suggest that, in order to enhance understanding of shifts in psychological outcomes such as subjective wellbeing and loneliness, future longitudinal studies on Facebook engagement should extend over longer periods of time.

Social contact is a basic human need. A lack of such contact is associated with numerous negative psychological and physiological consequences (Holt-Lunstad, 2017; Ong et al., 2016). The elderly are particularly susceptible to these consequences, which can manifest as loneliness, low self-esteem, anxiety, and ill-health (Armitage & Nellums, 2020; Santini et al., 2020). Involvement in social media activity might offer an opportunity for increased social connectivity and, consequently, for improved subjective wellbeing and reduced loneliness (Chopik, 2016; Hutto et al., 2015).

This proposition was reinforced following the announcement, in March 2020, by the World Health Organization (WHO) that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, or COVID-19) was at pandemic status. Along with this announcement came the strong recommendation that social distancing be practiced to reduce physical contact and thereby curb the spread of the virus (WHO, 2020). As people were no longer able to physically connect with others at pre-pandemic levels, they turned to social media platforms to satisfy needs for interaction (Schumacher & Kent, 2020; Watson, 2020). Hence, there has been a significant increase in social media use, including among the elderly. This increase is suggestive of the value inherent in digital platforms to foster a sense of social connection (Global Web Index, 2020).

Loneliness among Older Adults

Loneliness, as a psychological construct, is defined as an undesirable feeling caused by a dissonance between the desired extent of social interaction and actual opportunities for such interaction (Domènech-Abella et al., 2017). Studies consistently show that, across age groups, children, adolescents, and the elderly experience higher rates of loneliness than young and middle-aged adults (see, e.g., Lasgaard et al., 2016). The condition is particularly prevalent among older adults, with global estimates ranging from 10–30% among that particular demographic (Chen & Feeley, 2014; Phaswana-Mafuya & Peltzer, 2017).

The prevalence of loneliness in older adults is of concern to health professionals as it is a significant contributor to decreased physical and mental wellbeing (Cudjoe et al., 2020; Donovan et al., 2017). One line of empirical investigation suggests that presence of subjective feelings of loneliness is associated with cardiovascular complications, elevated blood pressure, depression and suicidal ideation, and cognitive impairment (Golden et al., 2009; Shiovitz-Ezra & Leitsch, 2010). A separate set of studies suggests that risk factors for loneliness and subsequent declines in subjective wellbeing among older adults include interruptions to social connectivity such as retirement, family relocations, deaths of

partners/spouses, shrinking social networks, and decreased mobility (Nicolaisen & Thorsen, 2014; Sinclair & Grieve, 2017).

The concern regarding high rates of loneliness in older adult cohorts is exacerbated by an increasing greying of the global population (The World Bank, 2019). In 2019, the number of adults aged 65+ exceeded the number of children below the age of 5 years, a population ageing trend contrary to historical data (United Nations, 2019). Epidemiological projections estimate that, within the next four decades, longer lifespans will mean that more than 20% of the population will be aged 65+ (Newman & Zainal, 2020).

Relieving Loneliness in Older Adults

Social connection is a vital component in preventing and alleviating loneliness in older adults (Cacioppo et al., 2010; Santini et al., 2020). Historically, community and family life afforded the elderly ample opportunities to make and maintain such connection. However, changing environmental conditions, such as increasingly dispersed family networks and more insular community life, have progressively deprived this demographic group of face-to-face interaction (Steptoe et al., 2013). Currently, the physical distancing required by the COVID-19 pandemic places the elderly at increased risk of social isolation (Clay, 2020).

Not all changes to environmental conditions have had a negative impact on social connectivity, however. Over the past 10–15 years, landmark developments in information technology (e.g., global digital communication networks) and the concomitant proliferation of social networking sites (SNSs) have expanded possibilities for social connection (Gustafson et al., 2015; Heo et al., 2015).

Recent global estimates suggest there are approximately 3.8 billion active SNS users, which indicates that one in three people in the world use SNSs (Kemp, 2020). Facebook is the most popular platform, increasing from use by 1.5% of the global population in 2008 to 30% in 2018, with a current estimate of 2.4 billion users (Chaffey, 2020). Facebook's users log in primarily to interact with people they know personally (Kowal et al., 2020; Nadkarni & Hofmann, 2012)

Although most SNS users are adolescents and young adults, uptake is increasing rapidly among older adults (Chang et al., 2019; Khalaila & Vitman-Schorr, 2018). In 2019, 68% of North Americans aged 50–64 and 40% aged ≥65 years were Facebook users (Clement, 2019). South African statistics indicate that approximately 27% of the population uses Facebook and that, of this number, almost 10% are adults older than 55 years (Clement, 2020a).

An online global survey conducted between 16 and 20 March 2020 (i.e., during a period of strict COVID-19 lockdown), enquiring about in-home media consumption in 16–64-year-olds, indicated a 44% increase in time spent on social media in South Africa, on par with the global average (Watson, 2020). An independent study that gathered data from 2,218 North American residents and 1,726 United Kingdom (UK) residents (age range = 16–64 years) between 25 and 30 March 2020 reported that 69% of respondents in North America and 54% of those in the UK were Facebook users (Global Web Index, 2020). The same study showed that adults aged 57–64 years were using social media to keep in touch with friends more so than younger age groups. Moreover, users 65 years and older are the fastest growing group on Facebook (Aboulhosn, 2020). Facebook use has increased by almost 30% throughout the pandemic, thereby adding 100 million users to its platform (Hutchinson, 2020).

Although SNSs like Facebook offer many opportunities for social connection (Goswami et al., 2010; Johnston et al., 2013), there is disagreement about whether digital social engagement mitigates or exacerbates loneliness (Chopik, 2016; Cotten et al., 2013). Whereas some studies suggest that SNSs enable users to meet their human need for social engagement, thereby decreasing loneliness and boosting subjective wellbeing (Oh et al., 2014; Szabo et al., 2019), others suggest that SNS use may impair subjective wellbeing by increasing loneliness, compromising psychological health, and diminishing self-esteem and confidence (Vogel et al., 2015; Wible, 2020). Still other studies find no significant association between SNS use and loneliness (Aarts et al., 2015; Yu et al., 2018).

Recent research suggests that it is not *whether* but *how* users engage on Facebook that affects their subjective wellbeing (Gerson et al., 2017; Wolfers et al., 2020). Studies show that consuming but not creating content (passive use) generally has a negative effect, whereas actively engaging with content has a positive impact (Verduyn et al., 2017). An experimental study by Verduyn et al. (2015) distinguished between active and passive modes of engagement, defining active use as "activities that facilitate direct exchanges with others (e.g., posting status updates, commenting on posts)" and passive use as being limited to "consuming information without direct exchanges (e.g., scrolling through news feeds, viewing posts)" (p. 480). They found that healthy young adults who actively engaged on Facebook for 10 minutes during an in-laboratory session (n = 42) retained a consistent level of wellbeing from the beginning of that session through to an end-of-the-day measurement point ($\pm$9 hours). However, those who engaged passively for the same amount of time (n = 42) reported decreased wellbeing over the same 9-hour period. This finding is consistent with

other research indicating that passive SNS use predicts increased loneliness and decreased subjective wellbeing (see, e.g., Gerson et al., 2017). Hence, these studies point to type of engagement as a possible key determinant of the outcome of SNS activity.

Rationale, Aim, and Hypothesis

Loneliness is prevalent in an increasingly ageing population, with one of the primary causes being diminishing in-person social interactions. Older adults are particularly susceptible to loneliness for reasons that include decreased mobility, geographical isolation, and shrinking social circles (Steptoe et al., 2013). Of particular concern to psychologists is that loneliness is associated with myriad negative outcomes and reduced subjective wellbeing (Blazer, 2020).

Research suggests that social isolation and its attendant loneliness could be alleviated by active participation in online communication platforms, particularly those such as Facebook that encourage personal interaction (Verduyn et al., 2017). There is, however, a dearth of evidence-based studies on the relationship between Facebook use and subjective wellbeing and loneliness in older adults; almost all prior research has been conducted using adolescent and younger adult samples. There is therefore a substantial knowledge gap regarding appropriate information-age interventions that can address negative effects associated with social disconnectedness and loneliness in older adults (Chang et al., 2019; Dury, 2014). In an increasingly electronically connected world, this is a significant omission from the agenda of interventionist strategies intended to encourage wellbeing in an expanding older adult population.

Hence, this research investigated the psychological effects of active Facebook use as a mechanism that increases digital social engagement among the elderly and thereby decreases loneliness and bolsters wellbeing. We tested the hypothesis that healthy community-dwelling older adults with a greater degree of active Facebook use will exhibit higher levels of self-reported subjective wellbeing and lower levels of loneliness than those who had a greater degree of passive Facebook use.

Method

Design and Setting

The study adopted a longitudinal observational design. Participants were recruited using digital platforms, and data were collected via telephonic and online surveys. Participants completed study measures three times a day (morning, late afternoon, and evening) over 3 consecutive days.

The COVID-19 pandemic and concomitant physical distancing requirements necessitated that the research be conducted using digital technology. The use of Internet-based surveys has increased in many areas of psychological research in recent years. Generally, online survey methodologies show equivalent validity, reliability, and results to conventional methods, in addition to being convenient, time efficient, and cost effective (Denissen et al., 2010; McInroy, 2016).

Participants

Recruitment

We used snowball sampling to recruit 120 healthy older adults (age range 48–78 years). We distributed the invitation to participate (Appendix A) via personal connections on WhatsApp and Facebook, and via targeted Facebook groups (e.g., The Village, Noordhoek Community Forum). The invitation included a call to participate and a request to forward the invitation to others. Snowballing extended the invitation to a wider audience. To further increase reach, we distributed both English and Afrikaans versions of the invitation. The invitation included hyperlinks to independent website landing pages in both languages that provided further information and a contact form, as well as telephone numbers and email addresses for the research team (Appendix B). Additionally, participants were able to digitally complete the consent form and the survey, or download print versions.

Eligibility Criteria

Inclusion criteria were that participants were (a) aged between 45 and 80 years, (b) able to converse in English and/or Afrikaans, and (c) existing Facebook users active at least five days a week.

Power Analysis

According to the initial proposal, we used G*Power software (Faul et al., 2009) to conduct a power analysis with the following parameters: analysis = linear multiple regression (fixed model, R^2 deviation from zero), effect size (Cohen's f^2) = .15 (a medium effect size based on findings from Verduyn et al., 2015), α = .05, and desired statistical power (1 – ß) = .80. The calculation outcome estimated that N = 103 would be satisfactory.

Subsequently, we modified our statistical analyses to incorporate lagged regression. We tentatively suggest that the above-mentioned power calculation indicates that the size of our sample is sufficient for lagged regression.

Materials and Procedures

Enrolment

After volunteers contacted us to express interest in participating, they were requested to either click "I agree" on the online consent form, or type their name on the digital version, or manually sign the print version. Signed consent documents were returned by email. Upon receipt, we arranged a telephonic meeting at a time convenient for that individual during which we described what was expected of study participants, explained the informed consent document (Appendix C), and answered any questions.

Profiling

Participants were directed to the English or Afrikaans website landing pages and requested to complete an online survey enquiring about their sociodemographic characteristics and motivations for using Facebook. The survey comprised a study-specific *Demographic Questionnaire* (Appendix D), and a study-specific *Facebook Use Questionnaire* (Appendix E). To ensure accuracy in translation, all English material was translated into Afrikaans and then back-translated into English (Brislin, 1970).

The Demographic Questionnaire collected a brief sociodemographic profile of the participant, including age, sex, place of abode, level of education, living arrangement, and employment status.

The Facebook Use Questionnaire begins with questions asking about the importance of Facebook to the participant and the extent of their investment in that SNS (as measured by their number of friends and number of years as a user). Thereafter, six dichotomous (yes/no) questions, modelled on ones used by Heinsberg et al. (2020), gathered information about reasons the participant uses Facebook.

Other measures were administered but are not described here because they are not pertinent to the aims of this study.

Test Days

After completing the profiling, the researcher and participant scheduled 3 consecutive test days (always a Monday, Tuesday, and Wednesday) when the researcher would call the participant. Each day followed the same scheduling and content protocol.

Early-morning Phone Call. During this call, which took place before 09h00, we administered the *Subjective Wellbeing Questionnaire* (Appendix F). This 4-item instrument, which was modelled on one used by Verduyn et al. (2015), was designed to measure both the respondent's subjective wellbeing and feelings of loneliness. Responses were rated on a 0 (*bad*)–100 (*good*) scale.

Late-afternoon Phone Call. During this call, which took place between 16h00 and 18h00, we administered the Subjective Wellbeing Questionnaire as well as the *Daily Activity Record Questionnaire* (Appendix G). The latter, which was developed for the purposes of the study, comprises two distinct sets of questions. The first set was designed to identify whether the participant used Facebook in a more active or passive way. We defined active and passive use following the Verduyn et al. (2015) definition. The second set enquired about the participant's non-Facebook activities during the day (e.g., use of other digital media, online and real-life interaction with others. Responses allowed identification of extraneous variables that might have affected the participant's emotional and psychological state.

Evening Phone Call. During this call, which took place between 19h00 and 22h00, we administered the Subjective Wellbeing Questionnaire as well as the *Loneliness Follow-up Questionnaire* (Appendix H). The latter is a study-specific 4-item questionnaire, modelled on one used by Verduyn et al. (2015), that gathered additional information about the participant's emotional state pertaining to loneliness and connectedness at the end of the day.

At the conclusion of the third test day's call, the researcher debriefed the participant and gave them an opportunity to ask any study-related questions. Finally, the researcher thanked the participant for their time and notified them that their involvement in the study was finished.

Statistical Analyses

We conducted all analyses using the lavaan package (R Core Team, 2013; Rosseel, 2012). Statistical significance (α) was determined using the modified hypothesis testing procedure that allows us to report the highest level at which the test statistic is detected to be significant. In this approach, we set the threshold for statistical significance to start at .05, instead of fixing the level beforehand. If the test statistic was not significant at that initial level, we extended significance threshold up to $p < .20$ (Underhill & Bradfield, 2013).

As an initial analytic step, we generated a set of descriptive statistics for each questionnaire's dataset. These statistics allowed us to (a) identify potential trends and influential outliers that may have affected the validity and/or generalisability of our models, and (b) test assumptions underlying subsequent parametric statistical tests. Once all the data were processed, all variables were standardized and centred.

We then used lagged regression modelling to test our hypothesis (i.e., that healthy community-dwelling older adults with higher levels of active [rather than passive] Facebook use will show higher levels of self-reported subjective wellbeing and lower levels loneliness). Thereafter, we extended our analysis to include three secondary predictor variables (i.e., time

spent on Facebook, other social media activity, social interaction), in order to determine whether there was any significant association between each of these variables and our two outcome variables (i.e., subjective wellbeing and loneliness). Where there was a significant relationship, we further investigated whether associations between active and passive Facebook use and the outcomes were mediated by the secondary predictor variable.

The sections below provide more detail about these inferential analyses.

Primary Analysis: Lagged Regression Modelling

Predictor Variables. The primary predictor variable, which reflected cumulative levels of active and passive Facebook engagement, was derived from the responses to the question: "What did you do on Facebook today?" (this question was contained within the Daily Activity Record Questionnaire). Scores were allocated according to the weights listed in Table 1. Activities that represented more engaged Facebook use (active use) were assigned higher values than activities that did not require personal investment in content (passive use). For each day, the value of the variable was calculated by summing the weights for each positive response, resulting in a set of scores ranging from 0–54. Hence, higher values indicate more active Facebook use.

Table 1
Graded Scale: Active and Passive Facebook Use

Facebook Activity	Weighting
Self-expression	10
Convenient communication with others	9
Connecting with family	8
Connecting with friends	8
Participation in a virtual community	6
Professional use	5
Supporting a social cause	4
Entertainment	3
Looking for information/news about COVID-19	1
Social surveillance (e.g., browsing)	0

Outcome Variables. Our two primary outcome variables were derived from participant self-reports on the Subjective Wellbeing Questionnaire. Values for the variable we labelled "subjective wellbeing" were taken from responses to the first item on that questionnaire: "On a scale of 0 (bad) – 100 (good), how do you feel right now?". Values for the variable we labelled "loneliness" were taken from responses to the third item on that questionnaire: "On a scale of 0 (bad) – 100 (good), how lonely do you feel right now?". Hence, for each participant a value for each variable was recorded on the morning and

evening of each of the 3 days of data collection (i.e., we recorded six scores for each participant for each variable).

Models. We applied a time series (autoregression) model that utilised observations from an earlier timepoint (e.g., Day 1 morning) as input to a regression equation to predict the value at the next timepoint (e.g., Day 1 evening). Also referred to as lagged regression, this analysis allowed us to predict future behaviour based on past behaviour. The models used the subjective wellbeing and loneliness data collected at six different timepoints (viz., early morning and evening, on 3 consecutive days). We labelled the times as shown in Table 2.

Table 2

Telephone Call Times

t	Time of telephone call
1	Day 1 morning
2	Day 1 evening
3	Day 2 morning
4	Day 2 evening
5	Day 3 morning
6	Day 3 evening

We created a lagged regression model for each of the two outcome variables. Each outcome variable was regressed on the value of that variable at the previous timestep. In addition, at the evening timepoints, the outcome variables were regressed on the values of the predictor variables recorded for that day. The regression model equations were:

$$Y_{t+1} = \alpha_a Y_t + \sum_{i=1}^{n} \beta_i X_{i,d} + \epsilon_{t+1} \quad \text{for } t \in \{1,3,5\}$$

$$Y_{t+1} = \alpha_b Y_t + \epsilon_{t+1} \quad \text{for } t \in \{2,4\}$$

where:

- Y_t is the outcome variable at time *t* (i.e., *Y* = subjective wellbeing or loneliness at one of the six different timepoints);
- $X_{i,d}$ is predictor variable $i \in \{1,2,3,4\}$ on day $d \in \{1,2,3\}$ (i.e., X_1 = Facebook use, in the primary model; X_2 = amount of time on Facebook, X_3 = other social media activity, and X_4 = social interaction, in the secondary models; d_1 = day 1, d_2 = day 2, d_3 = day 3);
- α_a is the autoregression coefficient from morning to evening of the same day;
- α_b is the autoregression coefficient from evening to morning of the following day;

- β_i is the regression coefficient for the predictor variable i (β_1 for Facebook use, in the primary model; β_2 for amount of time on Facebook, β_3 for other social media activity, and β_4 for social interaction, in the secondary models); and
- ϵ_t is the error term at time t.

Both the autoregression and regression coefficients were constrained to equality across days. This is known as metric invariance, meaning that each predictor variable contributes to the outcome variables to a similar degree each day. Selecting this more parsimonious model was justified because, compared to the unconstrained (configural) model, the comparative fit index (CFI) decreased by less than .01.

Secondary Analysis: More Lagged Regression Modelling

Although these secondary models were constructed identically to those described above, we used three different predictor variables to extend the primary analysis. Secondary predictor variable #1 was derived from responses to the question: "How much time did you spend on Facebook today?". Responses were allocated a score in the range 0–10 (Table 3).

Table 3

Weighting: Amount of Time Spent on Facebook

Time Spent on Facebook	Weighting
None	0
Less than 10 minutes	2
10–20 minutes	4
20–30 minutes	6
30–60 minutes	8
More than an hour	10

Secondary predictor variable #2 was derived from responses to the question: "Which other digital media platforms did you use today?". Responses were allocated a score in the range 0–10, with higher values indicating the use of a platform that generally requires more active use (Table 4). The ultimate value of the variable was calculated by summing the scores for each positive response, resulting in a total score in the range 0–36.

Table 4

Graded Scale: Active and Passive Use of Social Media Other than Facebook

Digital Media Platform	Weighting
WhatsApp	10
Snapchat	8
Instagram	7
LinkedIn	5
Twitter	3
Dating sites	2
Pinterest	1
YouTube	0

Secondary predictor variable #3 comprised the sum of the scores derived from the responses to the questions: “Did you interact with a friend or family member today?”, “Did you interact with people other than family or friends today?”, “Approximately how many different people did you talk to today?”, “Did you leave your home today?”, and “Did you attend any community gathering today?”.

For the first and second questions, responses were allocated a score in the range 0–10, with higher values indicating more active social engagement (Table 5).

Table 5

Graded Scale: Level of Engagement of Social Interaction

Social Interaction	Weighting
Social interaction with friend(s) or family member(s)	
In person	10
On a video call	8
On a phone call	7
Via instant messaging (e.g., WhatsApp and SMS)	4
Via email	2
No	0
Social interaction with people other than family or friends	
In person	6
On a video call	4
On a phone call	3
Via instant messaging (e.g., WhatsApp and SMS)	2
Via email	1
No	0

For the third question, responses were allocated a score in the range 0–12, with higher values designating more verbal interaction (Table 6).

Table 6
Graded Scale: Number of People Spoken To

Number of People	Weighting
0	0
1–2	2
2–4	4
4–6	6
6–8	8
8–10	10
>10	12

For the fourth and fifth question, ‘yes’ was assigned a value of 1 and ‘no’ was assigned a value of 0.

For each day, the value of the variable was calculated by summing the weights for each positive response, resulting in a set of scores ranging from 0–89. Hence, higher values indicate more active social engagement.

Mediation Analyses

We extended our analysis to assess whether associations between the major predictor variable (degree of active Facebook use) and an outcome variable (either subjective wellbeing or loneliness) was mediated by one of the secondary predictor variables (i.e., time spent on Facebook, other social media activity, and social interaction). Specifically, we fitted mediation models to investigate whether degree of active Facebook use was mediated by those of the secondary predictor variables that had shown a statistically significant relationship, as determined by the modified hypothesis testing procedure, with an outcome variable. We examined the mediation model to identify cases where the coefficient estimate had a *p*-value of less than .20.

Ethical Considerations

The increasing use of online research protocols has necessitated adjustments to the operationalisation of ethical considerations, particularly in relation to informed consent. Several authors have suggested the desirability of interactive completion of this process (Barrera et al., 2016; Whitehead, 2007). There are currently no ethical requirements specific to online research over and above adherence to the standard ethics codes (American Psychological Association, 2017; Psychological Society of South Africa, 2020). Hence, we discussed the informed consent document with the participant, ensuring that they had a thorough understanding of the research process and felt comfortable asking any questions that arose throughout the testing.

We emphasised the right to withdraw at any time without negative consequence and the confidentiality of personal details and data (we allocated each participant a random

number to ensure anonymity), including that no individual participant would be identified in any of the consequent reports or publications.

There was no risk of physical, social, or psychological harm to the participant. As an incentive to participate, we used a raffle drawing to award four separate R500 vouchers. We also sent a summary report (Appendix I) to each participant following completion of the study.

A common concern regarding online research is the potential lack of debriefing (Hoerger & Currell, 2012). During the final phone call, the researcher debriefed the participant and gave them an opportunity to ask any questions that may have arisen during the testing experience.

Emery (2014) identifies several privacy and confidentiality issues related to online research, including outsourcing of data storage, hacking of stored information, and the prospect of external access to potentially identifying information such as IP addresses. Access to the study data by spyware and malware was prevented by using a landing platform that is bound together with a Secure Sockets Layer (SSL) Certificate. The SSL Certificate activated the https protocol and allowed secure connections from a web server to a browser (Norton LifeLock Inc, 2020). Password protected computers and a dedicated Gmail address with two-step verification, to.bothofyou@gmail.com, were used. All hardcopies were kept under physical lock and key in a secure space.

Results

Sample Characteristics

The sample (N = 120) had a mean age of 58.95±8.37 years. As Table 7 shows, almost five times as many women as men participated. The table also shows that the modal participant was a woman with at least some tertiary education, who lived with family, and who was not retired from work.

Table 7

Sample Sociodemographic Characteristics (N = 120)

Variable	*f* (%)
Sex	
Female	99 (82.50%)
Male	21 (17.50%)
Highest Level of Education	
Secondary	34 (28.33%)
Tertiary	86 (71.67%)
Living Arrangement	
Live alone	14 (11.67%)
Live with partner	45 (37.50%)
Live with family	57 (47.50%)
Live with non-family	1 (0.83%)
Live alone but in a communal setting	3 (2.50%)
Life Stage	
Not retired	83 (69.17%)
Retired	37 (30.83%)

Facebook Use Characteristics

Most participants (*n* = 84; 70% of the sample) had ≥150 Facebook friends (Figure 1). Most (*n* = 91; 76%) considered Facebook to be important to them (Figure 2). Regarding reasons for logging onto Facebook, most participants used it to enhance social connectedness (i.e., keep in touch with friends, share good things with them) and to obtain new information and access news (Figure 3).

Figure 1

Number of Facebook Friends (N = 120)

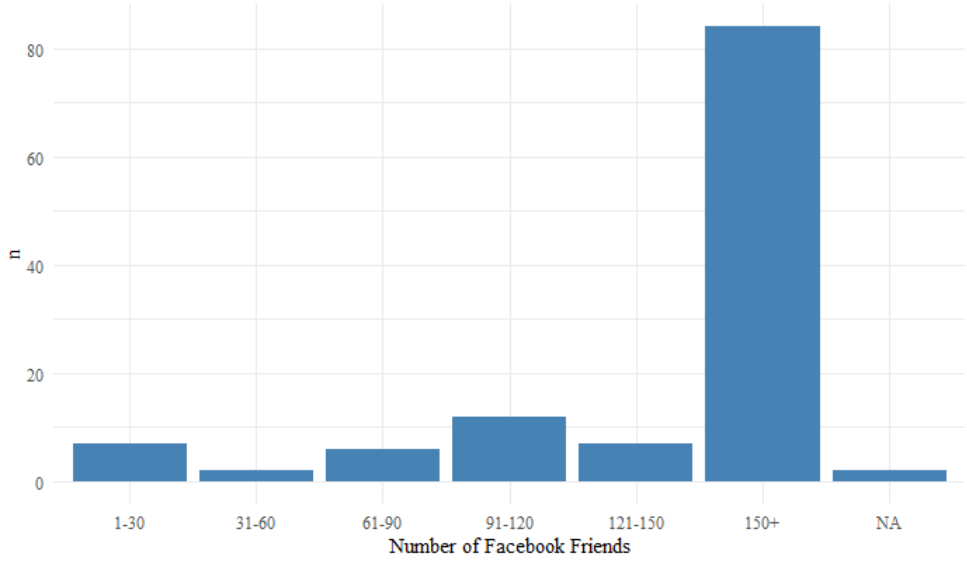
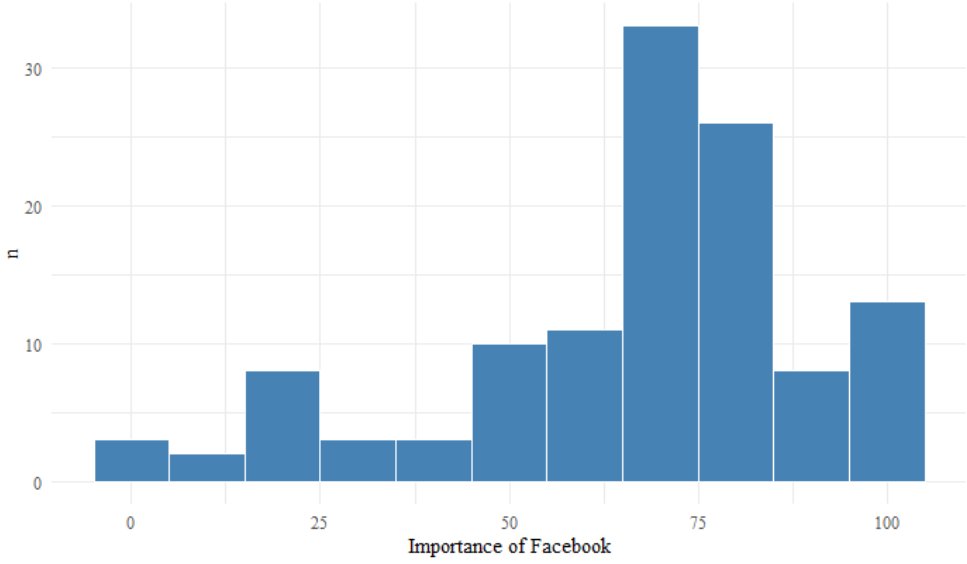


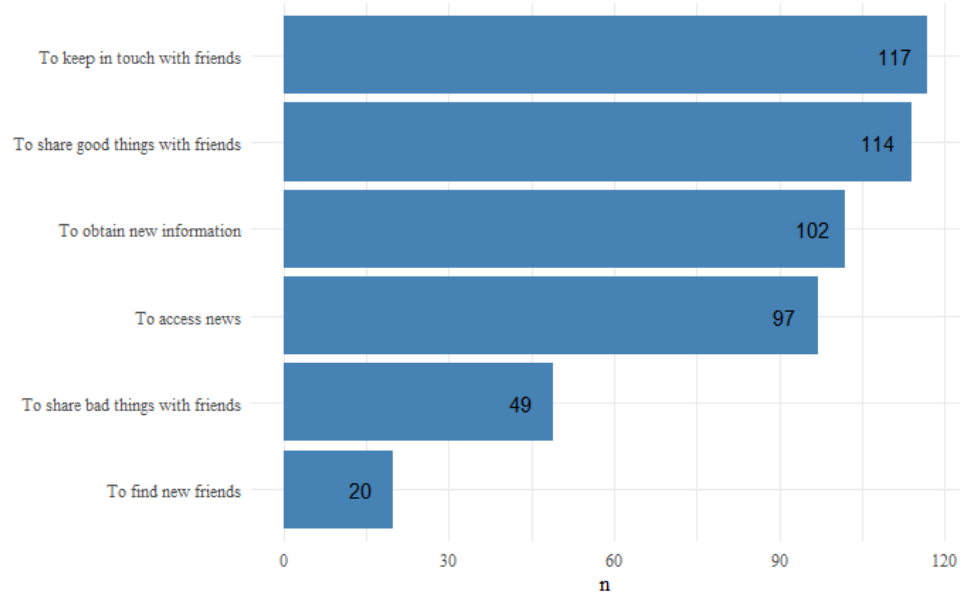
Figure 2

Importance of Facebook (N = 120)



Note. These figures represent participants' responses to the question: "From 0 to 100, how important is Facebook to you (where 0 is unimportant and 100 is very important)?".

Figure 3
Reasons for Using Facebook (N = 120)



Note. These figures represent participants' responses to the statement: "Think about the purposes you currently use Facebook for and tick yes or no for the statements below."

Lagged Regression Analyses

Primary Analysis

The analysis did not confirm the hypothesis that healthy community-dwelling older adults with a greater degree of active Facebook use will exhibit higher levels of self-reported subjective wellbeing and lower levels of loneliness over a short period of time (3 consecutive days). As Table 8 shows, the $ß_1$ estimates for both subjective wellbeing and loneliness were negative, indicating a tendency towards a slight decrease in subjective wellbeing and a slight increase in loneliness with increasingly active Facebook use. However, neither of those relationships were strong enough to exceed the threshold for statistical significance set at $p <$ .20.

Table 8 also shows that a strong autoregressive effect was present for both outcome variables. That is, the α_a coefficients indicate that evening scores were strongly correlated with the same day's morning scores, and the α_b coefficients indicate that morning scores were strongly correlated with the previous evening's scores.

Table 8

Lagged Regression Analyses Predicting Effects of Degree of Active and Passive Facebook Use, Amount of Time Spent on Facebook, Other Social Media Activity, and Social Interaction on Subjective Wellbeing and Loneliness (N = 120)

Outcome	Predictor variable	Coefficient	Estimate	*SE*	*p*
Subjective	Autoregression (AM-PM)	α_a	0.612	0.041	< .001***
	Autoregression (PM-AM)	α_b	0.580	0.053	< .001***
	Degree of active/passive Facebook	β_1	-0.020	0.047	.669
	Time spent on Facebook	β_2	-0.066	0.046	.150*
	Other social media activity	β_3	0.062	0.041	.132*
	Social interaction	β_4	0.057	0.043	.183*
Loneliness	Autoregression (AM-PM)	α_a	0.725	0.037	< .001***
	Autoregression (AM-PM)	α_b	0.771	0.042	< .001***
	Degree of active/passive Facebook	β_1	-0.034	0.041	.413
	Time spent on Facebook	β_2	0.014	0.040	.734
	Other social media activity	β_3	-0.065	0.036	.073**
	Social interaction	β_4	0.019	0.037	.610

Note. ***p < .001. **p < .10. *p < .20.

Analyses of Secondary Predictor Variables

Time Spent on Facebook. As shown in Table 9, more time spent using Facebook tended to be related to a lower level of subjective wellbeing. According to the modified hypothesis testing procedure, this result is "possibly significant" (Underhill & Bradfield, 2013, p. 197). There was no statistically significant association between the amount of time spent on Facebook and loneliness.

Other Social Media Activity. Analyses suggested that more time spent using social media platforms other than Facebook was related to a higher level of subjective wellbeing (at the level categorized as "possibly significant"; Underhill & Bradfield, 2013, p. 197) and to an increase in feelings of loneliness ("nearly significant"; Underhill & Bradfield, 2013, p. 197).

Social Interaction. Analyses suggested that increased social interaction was related to a higher level of subjective wellbeing (at the level categorized as "possibly significant"; Underhill & Bradfield, 2013, p. 197). There was no statistically significant association between social interaction and loneliness.

In summary, the lagged regression models that involved the three secondary predictor variables indicated that there was (a) a possibly significant relationship between greater amounts of time spent on Facebook and lower levels of subjective wellbeing, (b) a possibly significant relationship between more use of other social media platforms and higher levels of subjective wellbeing, (c) a nearly significant relationship between more use of other social

media platforms and higher levels of loneliness, and (d) a possibly significant relationship between higher levels of in-person social interaction and higher levels of subjective wellbeing.

Mediation Analyses

First, we fitted an autoregressive lagged regression model with degree of active Facebook use as the only predictor variable, thereby creating a single-predictor baseline model for comparing with mediation models. The model fits indicated that, as expected given the primary analysis, active Facebook use was not a significant predictor of either subjective wellbeing or loneliness.

Next, we fitted mediation models, introducing a second predictor variable as an intermediary between the degree of active Facebook use and the outcome variable. As Table 9 shows, there is some evidence that the relationship between degree of active Facebook use and subjective wellbeing is inconsistently mediated by time spent on Facebook. In this case, the magnitude of the direct effect was substantially less than that of the indirect effect, and the associated *p*-values confirm that the strength of the direct effect was greatly reduced from the baseline model. The indirect effect is "possibly significant" (Underhill & Bradfield, 2013, p. 197).

In the other cases, the strength of the direct effect of degree of active Facebook use on the outcome variable was not substantially decreased (in absolute value) by the mediator. In some cases, the direct and indirect effects pointed in different directions, strongly suggesting the absence of a mediation mechanism (Preacher & Hayes, 2004).

Table 9

Results of Mediation Model Fits (N =120)

Outcome variable	Mediator	Effect	Estimate	*p*
Subjective wellbeing	Time spent on Facebook	Direct effect	-0.003	.955
		Indirect effect	-0.032	.177
		Total effect	-0.034	.409
	Other social media	Direct effect	-0.039	.354
		Indirect effect	0.003	.551
		Total effect	-0.036	.401
	Social interaction	Direct effect	-0.051	.207
		Indirect effect	0.018	.158
		Total effect	-0.033	.429
Loneliness	Other social media	Direct effect	-0.029	.508
		Indirect effect	-0.003	.601
		Total effect	-0.032	.473

Note. The direct effect represents the effect of degree of active Facebook use on the outcome variable. The indirect effect is the product of the estimates of the effect of degree of active Facebook use on the mediator and the effect of the mediator on the outcome variable. The total effect is the sum of the direct and indirect effects.

Discussion

The primary aim of our study was to investigate whether cognitively intact older adults with higher levels of active (rather than passive) Facebook use would self-report higher levels of subjective wellbeing and lower levels of loneliness. To achieve this aim, we recruited 120 healthy community-dwelling older adults (99 women, age range 48–78 years, M_{age} = 58.95±8.37 years). Most participants had at least some tertiary education, were not retired from work, and lived with at least one family member. Using a longitudinal observational design, we administered study-specific questionnaires intended to elicit responses relating to various aspects of Facebook use (e.g., what participants did on Facebook that day, time spent on Facebook), subjective wellbeing, and loneliness. These data were collected in the course of three phone calls each day for 3 consecutive days.

We then used lagged regression modelling to investigate whether degree of active Facebook use significantly affected subjective wellbeing and loneliness. We also investigated whether there were any mediating effects of (a) amount of time spent on Facebook, (b) other social media activity, and (c) social interaction on the primary relationship of interest. Below, we discuss our findings in the context of relevant and recently published literature. Finally, we identify limitations of our study and offer recommendations for future research.

Our primary finding indicated that, over a short period of time, degree of active versus passive Facebook use was not likely to affect either subjective wellbeing or loneliness.

This finding does not confirm our hypothesis, and stands in contrast to published research reporting positive correlations between active Facebook use and increased subjective wellbeing (Grieve et al., 2013) and between passive Facebook use and decreased subjective wellbeing (Escobar-Viera et al., 2018). Similarly, previous studies have shown that active social media use can increase a sense of connectedness, belonging, and identity (i.e., can decrease loneliness) through the creation and maintenance of relationships (see, e.g., Ryan et al., 2017), whereas passive social media use can increase loneliness (Aalbers et al., 2019; Frison & Eggermont, 2020).

One possible explanation for the discrepancy between the current findings and those of previous studies on active and passive Facebook use is that our study is one of few that used a sample of older adults, and hence this cohort is relatively under-researched. We speculate that different patterns of, and motivations for, Facebook use between younger and older cohorts might influence results. Different age cohorts may use Facebook for different reasons; for example, whereas previous research suggests that adolescents generally tend to use social media for recreational purposes (Escobar-Viera et al., 2018), participants in our sample prioritized keeping in touch with others, sharing good news, and accessing new information and news. Moreover, it is possible that older adults may be less affected by social comparison, which is associated with negative Facebook use outcomes, than younger adults and adolescents (Appel et al., 2016; Yu et al., 2018). These differences suggest that further research is necessary to determine whether there are age-related dissimilarities in relations between active/passive Facebook use and psychological outcomes such as subjective wellbeing and loneliness.

Another possible explanation is that we did not capture all daily Facebook use: we only inquired about Facebook daily use during the late-afternoon phone call, thereby excluding information pertaining to evening Facebook activity. Many people use Facebook during the evening, particularly around 20h00 (Aboulhosn, 2020). Additionally, almost 70% of our participants were not retired, suggesting that most worked during the day and therefore, by implication, may have spent more time on Facebook in the evening. Hence, our study did not capture potentially valuable data pertaining to time spent on Facebook and the extent of active and passive Facebook use throughout the day.

A further consideration is that our data collection occurred within the context of the COVID-19 pandemic and the concomitant lockdown regulations that necessitated social isolation. Pertinently, digital emotional contagion (i.e., a term describing the phenomenon where emotions expressed in content posted on social media may affect the emotional state of

the perceiver without their awareness (Goldenberg & Gross, 2020; Hatfield et al., 1993) may have played a role in shaping our results. Research has shown that emotional contagion is a core driver of collective and individual behaviour, and that it can affect the emotions and behaviours of users across various digital domains (Goldenberg et al., 2020; Lomanowska & Guitton, 2016). For example, in a large and controversial study Kramer et al. (2014) demonstrated ways in which Facebook users' emotions could be manipulated by either positive or negative content. The study (N = 689,003) showed that when positive content was reduced (without the participants' explicit knowledge or consent), individuals' posts were less positive and more negative, but when negative content was reduced (again, without participants' knowledge or consent) negative posts decreased while positive material increased.

We speculate that digital emotional contagion may have facilitated a sense of solidarity, common cause, and shared hardship among Facebook users during the COVID-19 pandemic. Research by the Global Wellness Institute (2020) shows that not only did substantially more people turn to social media to remain connected to others during this time, but that posted content was more supportive and less idealistic and self-promoting. Although such a digital environment might have instilled an increase in subjective wellbeing and decreased loneliness, amplified and ongoing exposure to negative COVID-related information (e.g., deaths, economic privation) may have contributed to poorer psychological wellbeing (Gao et al., 2020; Lades et al., 2020). This may, in turn, have counteracted the benefit potentially accrued from active Facebook engagement with the previously-described positive content, contributing to the lack of association between degree of active Facebook use and subjective wellbeing and loneliness in our study.

The convenience sampling used to recruit our participants was primarily initiated via Facebook groups that nurture prosocial and civic behaviour (e.g., Noordhoek Community Forum, The Village). Moreover, participation in our study required a substantial investment of time from each participant. Together, these factors introduce the possibility that volunteer bias marked our sample. This threat to internal validity is perhaps aggravated by the fact that volunteers are typically characterized by personality traits that could have had a substantial effect on our outcomes. Several studies suggest that the psychological profile of volunteers generally encompasses individuals who are happier and healthier and who have an internal locus of control, higher levels of emotion stability, high self-esteem, and a higher degree of life satisfaction (Dolan et al., 2008; Thoits & Hewitt, 2001). Additionally, individuals with altruistic tendencies tend to be more socially active and to have more social contacts than

those who do not volunteer (see, e.g., Wilson, 2000). The Facebook use characteristics of our participants – high value attached to Facebook, large number of friends, and using Facebook to stay in touch with friends – confirms a volunteerism mindset and suggests, by inference, individuals who were less likely to report poor subjective wellbeing and loneliness. This prevailing personality profile may have skewed the findings of our study.

Ongoing research into active and passive Facebook use yields inconsistent results. Whereas some studies suggest that active use increases subjective wellbeing and decreases loneliness while passive use decreases subjective wellbeing and increases loneliness (see, e.g., Verduyn et al., 2015), others report no such association (see, e.g., Krasnova et al., 2013). This inconsistency may be attributable to the many nuances that should be considered when investigating how people engage on Facebook. For example, Ballantine and Stephenson (2011) showed that passively scrolling through support posts on a Weight Watchers website increased wellbeing, whereas Good et al. (2013) showed that passively scrolling through one's own previous posts and photos had a self-soothing effect. Early research suggested that personality traits (e.g., extroversion, neuroticism) may also influence the effects of active and passive Facebook use on subjective wellbeing and loneliness (see, e.g., Ryan & Xenos, 2011). Together, these studies and others like them hint towards the necessity of taking these nuances into account when researching this topic.

Another such nuance is the accurate capture of what constitutes active and passive Facebook use. As there is no validated scale measuring 'active' and 'passive' Facebook use, it is difficult to standardize or compare study findings on these two different styles of Facebook engagement (Trifiro & Gerson, 2019). Furthermore, study designs on this topic vary. Experimental research is able to control for extraneous variables (e.g., environmental conditions, time spent on active/passive Facebook engagement) but is probably unable to mimic real-world Facebook use (i.e., asking people to only use the network actively for 10 minutes in the laboratory is likely not reproducing their real-life online behaviour). In contrast, naturalistic designs, such as ours, are unable to capture degree of active/passive Facebook use with the same degree of accuracy but are able to record real-life online (and other) behaviour.

Yet another nuance is the role that time, in many guises, may play. Specific to our study, we propose that the timespan over which a study is conducted, the length of time an individual spends on Facebook, as well as the extent of time independently allocated to active and passive Facebook engagement, may influence outcomes. Our findings show a strong autoregressive effect for subjective wellbeing and loneliness (i.e., evening scores were

strongly correlated with the same day's morning scores, and morning scores were strongly correlated with the scores from the previous evening), indicating that subjective wellbeing and loneliness do not change substantially over short (half-day) time periods. Hence, we postulate that, had our study extended over a longer period of time, we may have found more substantial changes in subjective wellbeing and loneliness.

Moreover, current findings indicate that the more time spent on Facebook, the lower the subjective wellbeing (see, e.g., Phu & Gow, 2019). Consistent with this, our mediatory analysis showed that the relationship between active Facebook engagement and subjective wellbeing is mediated by time spent on Facebook.

A final consideration is the extent of time independently allocated to active and passive Facebook use engagement. In our study, we explored the relationship between the degree of active Facebook use and increased subjective wellbeing and decreased loneliness. We did not discern between the amount of time separately dedicated to active use versus that separately dedicated to passive use. The absence of this additional insight is a barrier to better understanding the outcomes of interest.

Limitations and Recommendations for Future Research

We acknowledge the following limitations of our design, and note that the study's findings should be considered in light of them. First, our data on Facebook use (generally, but also pertaining specifically to amount of active use versus amount of passive use) was incomplete. For instance, the lack of information on evening Facebook use is pertinent because it compromises the efficacy of our data in exploring the total extent to which degree of active Facebook use influences subjective wellbeing and loneliness. Additionally, the absence of data on the extent of time independently allocated to active and passive Facebook use means we are unable to offer complete insight into the effects of type of use on the outcomes of interest in this sample. Specifically, it is possible that the ratio of time dedicated to active and passive engagement may influence subjective wellbeing and loneliness outcomes differently to what we observed in our analyses, where only cumulative levels of Facebook engagement, later categorized as either active and passive, were measured. A superficial scan of the existing literature suggests a dearth of research differentiating clearly between active and passive Facebook use in naturalistic settings.

Second, snowball sampling did not allow for curated participant selection. Our study's gender distribution (women = 82.50%, men = 17.50%) differed substantially from that of the estimated gender distribution of the global older adult Facebook-using population (women = 48.60%, men = 41.40%; Clement, 2020b). Moreover, the age distribution of our

sample was uneven (M = 58.95 years; i.e., the majority of our participants were concentrated at the younger end of our 48–78 years age range). Hence, our study sample is not representative of the global gender distribution of older adult Facebook users, and is skewed toward the younger end of our age range.

To expand understanding of the effects of type of Facebook use on subjective wellbeing and loneliness among older adults, future studies should seek to dissect the time ratio allocated to active and passive Facebook use, in addition to expanding the scope of data collection on type of Facebook use to include evening activity, in order to determine whether this affects psychological outcomes. We further recommend that future longitudinal research on this topic expand the duration of investigation so as to capture the possible long-term effects of active and passive Facebook use on subjective wellbeing and loneliness among older adults. Finally, because convenience-based sampling limited our ability to generalise to the population at large, future studies should use recruitment strategies (e.g., non-probability sampling) that permit selection of more representative groups.

Summary and Conclusions

This study contributes to the under-researched topic of how ways in which people engage with social networking sites (specifically, whether they engage actively or passively) may affect psychological outcomes among older cohorts. Our findings showed that, over 3 days, there was no significant association between the degree of active Facebook use and subjective wellbeing and loneliness among older adults. However, subsequent analyses indicated that the relationship between degree of active Facebook engagement and subjective wellbeing (but not loneliness) was inconsistently mediated by the amount of time spent on Facebook.

The findings imply that, in the short term, ways in which older adults engage with SNSs is unlikely to produce any significant changes in how well or how lonely they feel unless they spend an especially long time on those sites. However, it remains unknown whether this pattern of association will hold over the longer term (e.g., whether consistently active, but relatively low-volume, engagement over a period of months will still have no effects on subjective wellbeing or loneliness), and whether the association will differ in different age cohorts (e.g., whether adolescents and younger adults will respond differently, in terms of subjective wellbeing and loneliness, to the ways in which they engage with SNSs).

Social connections among the elderly, who are particularly susceptible to loneliness and social isolation, are essential for physical and mental wellbeing. Participation in social

media platforms, like Facebook, that encourage active engagement present opportunities for older adults to interact with others. Research indicates that such involvement may contribute to improved psychological wellbeing, contingent on an interplay of various factors (Gerson et al., 2017). Future studies should further investigate the characteristics of older adults' SNS use in order to identify cohort-specific nuances. They should also take measures over longer time periods in order to capture more enduring changes in psychological outcomes.

Acknowledgements

We thank our supervisor Professor Kevin Thomas for his guidance and support throughout this project, including his advice on adapting the research to accommodate the restrictions imposed by the COVID-19 pandemic. We have gained much from his insight, meticulous attention to detail, and thorough feedback.

We would also like to extend our gratitude and appreciation to the following people:
Thank you to the UCT Cyberpsychology group for their ongoing input and comments.
To Terry Theron, thank you for your digital knowledge and for hosting our landing pages.
To all of our participants, we appreciate your time and contributions.

References

Aalbers, G., McNally, R. J., Heeren, A., de Wit, S., & Fried, E. I. (2019). Social media and depression symptoms: A network perspective. *Journal of Experimental Psychology: General*, *148*(8), 1454–1462. https://doi.org/10.1037/xge0000528

Aarts, S., Peek, S. T. M., & Wouters, E. J. M. (2015). The relation between social network site usage and loneliness and mental health in community-dwelling older adults. *International Journal of Geriatric Psychiatry*, *30*(9), 942–949. https://doi.org/10.1002/gps.4241

Aboulhosn, S. (2020, August 3). *18 Facebook statistics every marketer should know in 2020*. Sprout Social. https://sproutsocial.com/insights/facebook-stats-for-marketers/

American Psychological Association. (2017). *Ethical principles of psychologists and code of conduct*. https://www.apa.org/ethics/code/index

Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, *9*, 44–49. https://doi.org/10.1016/j.copsyc.2015.10.006

Armitage, R., & Nellums, L. B. (2020). Covid-19 and the consequences of isolating the elderly. *The Lancet Public Health*, *0*(0). https://doi.org/10.1016/S2468-2667(20)30061-X

Ballantine, P. W., & Stephenson, R. J. (2011). Help me, I'm fat! Social support in online weight loss networks. *Journal of Consumer Behaviour*, *10*(6), 332–337. https://doi.org/10.1002/cb.374

Barrera, A. Z., Dunn, L. B., Nichols, A., Reardon, S., & Muñoz, R. F. (2016). Getting it "right": Ensuring informed consent for an online clinical trial. *Journal of Empirical Research on Human Research Ethics*, *11*(4), 291–298. https://doi.org/10.1177/1556264616668974

Blazer, D. (2020). Social isolation and loneliness in older adults—A mental health/public health challenge. *JAMA Psychiatry*, *77*(10), 990. https://doi.org/10.1001/jamapsychiatry.2020.1054

Brislin, R. W. (1970). Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. https://doi.org/10.1177/135910457000100301

Cacioppo, J. T., Hawkley, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the chicago health, aging, and social relations study. *Psychology and Aging*, *25*(2), 453–463. https://doi.org/10.1037/a0017216

Chaffey, D. (2020, April 17). *Global social media research summary 2020*. Smart Insights. https://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/

Chang, A. Y., Skirbekk, V. F., Tyrovolas, S., Kassebaum, N. J., & Dieleman, J. L. (2019). Measuring population ageing: An analysis of the global burden of disease study 2017. *The Lancet Public Health*, *4*(3), e159–e167. https://doi.org/10.1016/S2468-2667(19)30019-2

Chen, Y., & Feeley, T. H. (2014). Social support, social strain, loneliness, and well-being among older adults: An analysis of the health and retirement study. *Journal of Social and Personal Relationships*, *31*(2), 141–161. https://doi.org/10.1177/0265407513488728

Chopik, W. J. (2016). The benefits of social technology use among older adults are mediated by reduced loneliness. *Cyberpsychology, Behavior and Social Networking*, *19*(9), 551–556. https://doi.org/10.1089/cyber.2016.0151

Clay, R. (2020). *Covid-19 isn't just a danger to older people's physical health*. American Psychological Association. https://www.apa.org/news/apa/2020/03/covid-19-danger-physical-health

Clement, J. (2019). *U.S. Facebook usage by age group 2019*. Statista. https://www.statista.com/statistics/246221/share-of-us-internet-users-who-use-facebook-by-age-group/

Clement, J. (2020a, March 30). *South Africa Facebook users by age 2020*. Statista. https://www.statista.com/statistics/1028389/facebook-user-share-in-south-africa-by-age/

Clement, J. (2020b, April). *Coronavirus: Virtual socializing with friends and family by age U.S.* Statista. https://www.statista.com/statistics/1108560/virtual-socializing-with-friends-and-family-during-coronavirus-usa-age/

Cotten, S. R., Anderson, W. A., & McCullough, B. M. (2013). Impact of internet use on loneliness and contact with others among older adults: Cross-sectional analysis. *Journal of Medical Internet Research*, *15*(2), 215–227. https://doi.org/10.2196/jmir.2306

Cudjoe, T. K. M., Roth, D. L., Szanton, S. L., Wolff, J. L., Boyd, C. M., & Thorpe, R. J. (2020). The epidemiology of social isolation: National health and aging trends study. *The Journals of Gerontology: Series B*, *75*(1), 107–113. https://doi.org/10.1093/geronb/gby037

Denissen, J. J. A., Neumann, L., & van Zalk, M. (2010). How the internet is changing the implementation of traditional research methods, people's daily lives, and the way in which developmental scientists conduct research. *International Journal of Behavioral Development*, *34*(6), 564–575. https://doi.org/10.1177/0165025410383746

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology*, *29*(1), 94–122. https://doi.org/10.1016/j.joep.2007.09.001

Domènech-Abella, J., Lara, E., Rubio Valera, M., Olaya Guzmán, B., Moneta, M. V., Rico Uribe, L. A., Ayuso Mateos, J. L., Mundó Blanch, J., & Haro Abad, J. M. (2017). Loneliness and depression in the elderly: The role of social network. *Social Psychiatry and Psychiatric Epidemiology*, *52*(4), 381–390. https://doi.org/10.1007/s00127-017-1339-3

Donovan, N. J., Wu, Q., Rentz, D. M., Sperling, R. A., Marshall, G. A., & Glymour, M. M. (2017). Loneliness, depression and cognitive function in older U.S. adults: Loneliness, depression and cognition. *International Journal of Geriatric Psychiatry*, *32*(5), 564–573. https://doi.org/10.1002/gps.4495

Dury, R. (2014). Social isolation and loneliness in the elderly: An exploration of some of the issues. *British Journal of Community Nursing*, *19*(3), 125–128. https://doi.org/10.12968/bjcn.2014.19.3.125

Emery, K. (2014). So you want to do an online study: Ethics considerations and lessons learned. *Ethics & Behavior*, *24*(4), 293–303. https://doi.org/10.1080/10508422.2013.860031

Escobar-Viera, C. G., Shensa, A., Bowman, N. D., Sidani, J. E., Knight, J., James, A. E., & Primack, B. A. (2018). Passive and active social media use and depressive symptoms among United States adults. *Cyberpsychology, Behavior, and Social Networking*, *21*(7), 437–443. https://doi.org/10.1089/cyber.2017.0668

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Frison, E., & Eggermont, S. (2020). Toward an integrated and differential approach to the relationships between loneliness, different types of Facebook use, and adolescents' depressed mood. *Communication Research*, *47*(5), 701–728. https://doi.org/10.1177/0093650215617506

Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., Wang, Y., Fu, H., & Dai, J. (2020). Mental health problems and social media exposure during COVID-19 outbreak. *PLoS ONE*, *15*(4), 1–10. https://doi.org/10.1371/journal.pone.0231924

Gerson, J., Plagnol, A. C., & Corr, P. J. (2017). Passive and active Facebook use measure (PAUM): Validation and relationship to the reinforcement sensitivity theory. *Personality and Individual Differences*, *117*, 81–90. https://doi.org/10.1016/j.paid.2017.05.034

Global Web Index. (2020, April). *GWI Coronavirus research. Series 4: Media consumption and sport*. GlobalWebIndex. https://www.globalwebindex.com/hubfs/1. Coronavirus Research PDFs/GWI coronavirus findings April 2020 - Media Consumption (Release 4).pdf

Global Wellness Institute. (2020, July 1). *Closely connected: Social media's role during Covid-19*. https://blog.globalwebindex.com/trends/social-media-covid-19/

Golden, J., Conroy, R., Bruce, I., Denihan, A., Greene, E., Kirby, M., & Lawlor, B. (2009). Loneliness, social support networks, mood and wellbeing in community-dwelling elderly. *International Journal of Geriatric Psychiatry*, *24*(7), 694. https://doi.org/10.1037/0033-2909.117.3.497

Goldenberg, A., Garcia, D., Halperin, E., Zaki, J., Kong, D., Golarai, G., & Gross, J. J. (2020). Beyond emotional similarity: The role of situation-specific motives. *Journal of Experimental Psychology: General*, *149*(1), 138–159. https://doi.org/10.1037/xge0000625

Goldenberg, A., & Gross, J. J. (2020). Digital emotion contagion. *Trends in Cognitive Sciences*, *24*(4), 316–328. https://doi.org/10.1016/j.tics.2020.01.009

Good, A., Sambhanthan, A., & Panjganj, V. (2013). Looking back at Facebook content and the positive impact upon wellbeing: Exploring reminiscing as a tool for self soothing. In A.A. Ozok & P. Zaphiris (Eds). *Online Communities and Social Computing, 8029,* 278–286. https://doi.org/10.1007/978-3-642-39371-6

Goswami, S., Köbler, F., Leimeister, J. M., & Krcmar, H. (2010). Using online social networking to enhance social connectedness and social support for the elderly. In R. Sabherwal & M. Sumner (Eds.), *Proceedings of the International Conference on Information Systems, ICIS 2010*. Association for Information Systems. http://aisel.aisnet.org/icis2010_submissions/109

Grieve, R., Indian, M., Witteveen, K., Anne Tolan, G., & Marrington, J. (2013). Face-to-face or Facebook: Can social connectedness be derived online? *Computers in Human Behavior*, *29*(3), 604–609. https://doi.org/10.1016/j.chb.2012.11.017

Gustafson, D. H., McTavish, F., Gustafson, D. H., Mahoney, J. E., Johnson, R. A., Lee, J. D., Quanbeck, A., Atwood, A. K., Isham, A., Veeramani, R., Clemson, L., & Shah, D. (2015). The effect of an information and communication technology (ICT) on older adults' quality of life: Study protocol for a randomized control trial. *Trials*, *16*. https://doi.org/10.1186/s13063-015-0713-2

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. *Current Directions in Psychological Science*, *2*(3), 96–99. https://doi.org/10.1111/1467-8721.ep10770953

Heinsberg, L. W., Bender, C. M., Rohay, J. M., Sherwood, P. R., & Crago, E. A. (2020). Psychometric properties of the Patient Assessment of Own Functioning Inventory following aneurysmal subarachnoid hemorrhage. *Journal of Nursing Measurement*. https://doi.org/10.1891/JNM-D-18-00117

Heo, J., Chun, S., Lee, S., Lee, K. H., & Kim, J. (2015). Internet use and well-being in older adults. *Cyberpsychology, Behavior, and Social Networking*, *18*(5), 268–272. https://doi.org/10.1089/cyber.2014.0549

Hoerger, M., & Currell, C. (2012). Ethical issues in Internet research. In S. J. Knapp. M. C. Gottleib, M. M. Handelsman, & L. D. VandeCreek (Eds). In *APA handbook of ethics in psychology: Vol. 2: Practice, teaching, and research* (pp. 385–400). American Psychological Association. doi: 10.1037/13272-018

Holt-Lunstad, J. (2017). The potential public health relevance of social isolation and loneliness: Prevalence, epidemiology, and risk factors. *Public Policy & Aging Report*, *27*(4), 127–130. https://doi.org/10.1093/ppar/prx030

Hutchinson, A. (2020). *Facebook adds 100 million more users, reports 11% revenue growth amid Covid-19*. Social Media Today. https://www.socialmediatoday.com/news/facebook-adds-100-million-more-users-reports-11-revenue-growth-amid-covid/582653/

Hutto, C. J., Bell, C., Farmer, S., Fausset, C., Harley, L., Nguyen, J., & Fain, B. (2015). Social media gerontology: Understanding social media usage among older adults. *Web Intelligence*, *13*(1), 69–87. https://doi.org/10.3233/WEB-150310

Johnston, K., Tanner, M., Lalla, N., & Kawalski, D. (2013). Social capital: The benefit of Facebook 'friends'. *Behaviour & Information Technology*, *32*(1), 24–36. https://doi.org/10.1080/0144929X.2010.550063

Kemp, S. (2020). *Digital 2020: 3.8 billion people use social media*. We Are Social. https://wearesocial.com/blog/2020/01/digital-2020-3-8-billion-people-use-social-media

Khalaila, R., & Vitman-Schorr, A. (2018). Internet use, social networks, loneliness, and quality of life among adults aged 50 and older: Mediating and moderating effects. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation*, *27*(2), 479–489. https://doi.org/10.1007/s11136-017-1749-4

Kowal, M., Sorokowski, P., Sorokowska, A., Dobrowolska, M., Pisanski, K., Oleszkiewicz, A., Aavik, T., Akello, G., Alm, C., Amjad, N., Anjum, A., Asao, K., Atama, C. S., Atamtürk Duyar, D., Ayebare, R., Bendixen, M., Bensafia, A., Bizumic, B., Boussena, M., … Zupančič, M. (2020). Reasons for Facebook usage: Data from 46 countries. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.00711

Kramer, A. D. I., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences*, *111*(24), 8788–8790. https://doi.org/10.1073/pnas.1320040111

Krasnova, H., Wenninger, H., Widjaja, T., & Buxmann, P. (2013). Envy on Facebook: A hidden threat to users' life satisfaction? *Krasnova, Hanna; Wenninger, Helena; Widjaja, Thomas; Buxmann, Peter (2013). Envy on Facebook: A Hidden Threat to Users' Life Satisfaction? In: Proceedings of the 11th International Conference on Wirtschaftsinformatik (WI2013). Universität Leipzig, Germany. 27.02.-01.03.2013.*, *2*, 1477–1491. https://boris.unibe.ch/47080/

Lades, L., Laffan, K., Daly, M., & Delaney, L. (2020). Daily emotional well-being during the COVID-19 pandemic. In *British Journal of Health Psychology* (Vol. 25, Issue 4, pp. 902–911). https://doi.org/10.31234/osf.io/pg6bw

Lasgaard, M., Friis, K., & Shevlin, M. (2016). 'Where are all the lonely people?' A population-based study of high-risk goups across the life span. *Social Psychiatry and Psychiatric Epidemiology*, *51*, 1373–1384. https://doi.org/10.1007/s00127-016-1279-3

Lomanowska, A. M., & Guitton, M. J. (2016). Online intimacy and well-being in the digital age. *Internet Interventions*, *4*, 138–144. https://doi.org/10.1016/j.invent.2016.06.005

McInroy, L. B. (2016). Pitfalls, potentials, and ethics of online survey research: LGBTQ and other marginalized and hard-to-access youths. *Social Work Research*, *40*(2), 83–93. https://doi.org/10.1093/swr/svw005

Nadkarni, A., & Hofmann, S. G. (2012). Why do people use Facebook? *Personality and Individual Differences*, *52*(3), 243–249. https://doi.org/10.1016/j.paid.2011.11.007

Newman, M. G., & Zainal, N. H. (2020). The value of maintaining social connections for mental health in older people. *The Lancet Public Health*, *5*(1), e12–e13. https://doi.org/10.1016/S2468-2667(19)30253-1

Nicolaisen, M., & Thorsen, K. (2014). Who are Lonely? Loneliness in Different Age Groups (18–81 Years Old), Using Two Measures of Loneliness. *The International Journal of Aging and Human Development*, *78*(3), 229–257. https://doi.org/10.2190/AG.78.3.b

Norton LifeLock Inc. (2020). *What is an SSL Certificate?* https://us.norton.com/internetsecurity-how-to-ssl-certificates-what-consumers-need-to-know.html

Oh, H. J., Ozkaya, E., & LaRose, R. (2014). How does online social networking enhance life satisfaction? The relationships among online supportive interaction, affect, perceived social support, sense of community, and life satisfaction. *Computers in Human Behavior*, *30*, 69–78. https://doi.org/10.1016/j.chb.2013.07.053

Ong, A. D., Uchino, B. N., & Wethington, E. (2016). Loneliness and health in older adults: A mini-review and synthesis. *Gerontology*, *62*(4), 443–449. https://doi.org/10.1159/000441651

Phaswana-Mafuya, N., & Peltzer, K. (2017). Prevalence of loneliness and associated factors among older adults in South Africa. *Global Journal of Health Science*, *9*(12), 1. https://doi.org/10.5539/gjhs.v9n12p1

Phu, B., & Gow, A. J. (2019). Facebook use and its association with subjective happiness and loneliness. *Computers in Human Behavior*, *92*, 151–159. https://doi.org/10.1016/j.chb.2018.11.020

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers : A Journal of the Psychonomic Society, Inc*, *36*(4), 717–731. https://doi.org/10.3758/BF03206553

Psychological Society of South Africa. (2020). *South African professional conduct guidelines in Psychology*. https://www.psyssa.com/ethics/

R Core Team. (2013). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. https://www.R-project.org/

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(1), 1–36. https://doi.org/10.18637/jss.v048.i02

Ryan, T., Allen, K. A., Gray, D. L., & McInerney, D. M. (2017). How social are social media? A review of online social behaviour and connectedness. *Journal of Relationships Research, 8*. https://doi.org/10.1017/jrr.2017.13

Ryan, T., & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior*, *27*(5), 1658–1664. https://doi.org/10.1016/j.chb.2011.02.004

Santini, Z. I., Jose, P. E., York Cornwell, E., Koyanagi, A., Nielsen, L., Hinrichsen, C., Meilstrup, C., Madsen, K. R., & Koushede, V. (2020). Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): A longitudinal mediation analysis. *The Lancet Public Health*, *5*(1), e62–e70. https://doi.org/10.1016/S2468-2667(19)30230-0

Schumacher, S., & Kent, N. (2020). *8 charts on Internet use around the world as countries grapple with Covid-19*. Pew Research Center. https://www.pewresearch.org/fact-tank/2020/04/02/8-charts-on-internet-use-around-the-world-as-countries-grapple-with-covid-19/

Shiovitz-Ezra, S., & Leitsch, S. A. (2010). The role of social relationships in predicting loneliness: The national social life, health, and aging project. *Social Work Research*, *34*(3), 157–167. https://doi.org/10.1093/swr/34.3.157

Sinclair, T. J., & Grieve, R. (2017). Facebook as a source of social connectedness in older adults. *Computers in Human Behavior*, *66*, 363–369. https://doi.org/10.1016/j.chb.2016.10.003

Steptoe, A., Shankar, A., Demakakos, P., & Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proceedings of the National Academy of Sciences*, *110*(15), 5797–5801. https://doi.org/10.1073/pnas.1219686110

Szabo, A., Allen, J., Stephens, C., & Alpass, F. (2019). Longitudinal analysis of the relationship between purposes of Internet use and well-being among older adults. *The Gerontologist*, *59*(1), 58–68. https://doi.org/10.1093/geront/gny036

The World Bank. (2019). *Population Ages 65 and Above (% of Total Population)*. https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS

Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, *42*(2), 115–131. https://doi-org.ezproxy.uct.ac.za/10.2307/3090173

Trifiro, B. M., & Gerson, J. (2019). Social media usage patterns: Research note regarding the lack of universal validated measures for active and passive use. *Social Media + Society*, *5*(2), 2056305119848743. https://doi.org/10.1177/2056305119848743

Underhill, L., & Bradfield, D. (2013). *Introstat (Statistics textbook)*. Faculty of Science, Department of Statistical Sciences. http://hdl.handle.net/11427/4160

United Nations. (2019). *World Population Prospects 2019: Highlights* (ST/ESA/SER.A/423). United Nations.

Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, *144*(2), 480–488. https://doi.org/10.1037/xge0000057

Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. *Social Issues & Policy Review*, *11*(1), 274–302. https://doi.org/10.1111/sipr.12033

Vogel, E. A., Rose, J. P., Okdie, B. M., Eckles, K., & Franz, B. (2015). Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes. *Personality and Individual Differences*, *86*, 249. https://doi.org/10.1016/j.paid.2015.06.026

Watson, A. (2020). *In-home media consumption due to the coronavirus outbreak among internet users worldwide as of March 2020, by country*. Statista. https://www.statista.com/statistics/1106498/home-media-consumption-coronavirus-worldwide-by-country/

Whitehead, L. C. (2007). Methodological and ethical issues in internet-mediated research in the field of health: An integrated review of the literature. *Social Science & Medicine*, *65*(4), 782–791. https://doi.org/10.1016/j.socscimed.2007.03.005

Wible, B. (2020). Connected, but at what cost?. *Science*, *368*(6488), 279–279. https://doi.org/10.1126/science.368.6488.279-a

Wilson, J. (2000). Volunteering. *Annual Review of Sociology*, *26*(1), 215. https://doi.org/10.1146/annurev.soc.26.1.215

Wolfers, L. N., Festl, R., & Utz, S. (2020). Do smartphones and social network sites become more important when experiencing stress? Results from longitudinal data. *Computers in Human Behavior*, *109*, 1–11. https://doi.org/10.1016/j.chb.2020.106339

World Health Organisation. (2020). Coronavirus Disease (COVID-19) Pandemic. https://www.who.int/emergencies/diseases/novel-coronavirus-2019

Yang, K., & Victor, C. (2011). Age and loneliness in 25 European nations. *Ageing and Society*, *31*(8), 1368–1388. https://doi.org/10.1017/S0144686X1000139X

Yu, R. P., Ellison, N. B., & Lampe, C. (2018). Facebook use and its role in shaping access to social benefits among older adults. *Journal of Broadcasting & Electronic Media*, *62*(1), 71–90. https://doi.org/10.1080/08838151.2017.1402905

Zickuhr, K., & Madden, M. (2012). *Older adults and internet use*. Pew Research Center.

Appendix A

Study Participation Invitation

English version

Afrikaans version

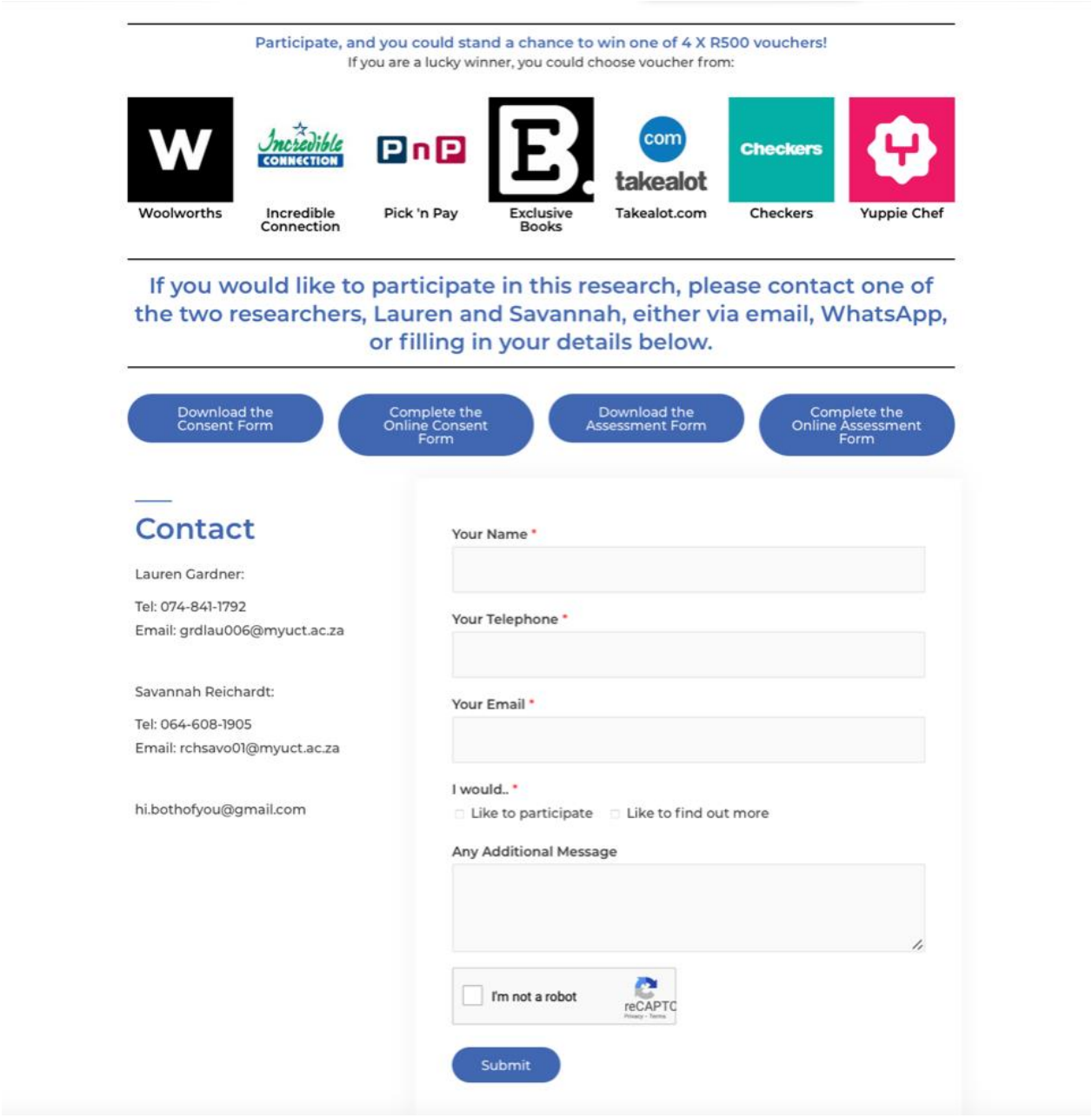
Appendix B

Landing Page

English version (part 1/2)

https://research.tntdigicomms.com/

(Part 2/2)


Participate, and you could stand a chance to win one of 4 X R500 vouchers!
If you are a lucky winner, you could choose voucher from:
Woolworths
Incredible Connection
Pick 'n Pay
Exclusive Books
Takealot.com
Checkers
Yuppie Chef
If you would like to participate in this research, please contact one of the two researchers, Lauren and Savannah, either via email, WhatsApp, or filling in your details below.
Download the Consent Form
Complete the Online Consent Form
Download the Assessment Form
Complete the Online Assessment Form
Contact
Lauren Gardner:
Tel: 074-841-1792
Email: grdlau006@myuct.ac.za
Savannah Reichardt:
Tel: 064-608-1905
Email: rchsavo01@myuct.ac.za
hi.bothofyou@gmail.com
Your Name *
Your Telephone *
Your Email *
I would.. *
Like to participate
Like to find out more
Any Additional Message
I'm not a robot
Submit

Afrikaans version (part 1/2)

https://research.tntdigicomms.com/afrikaans/

U word uitgenooi om deel te neem aan n navorsingstudie oor sosiale media gebruik!

UNIVERSITY OF CAPE TOWN

Soos u bewus is gebruik mense meer dikwels sosiale media. Ons weet egter baie min omtrent die effek van sosiale media verbruik ten opsigte van buie, slaap, verhoudings en ander dinge wat vir mense belangrik is. Ons doen navorsing oor hierdie aangeleentheid.

Wie kan deelneem?

U kan deelneem aan hierdie studie so lank as wat u:

- tussen die ouderdom van 50 en 75 is;
- Engels of Afrikaans praat;
- 'n Facebook profiel het, wat u gereeld gebruik

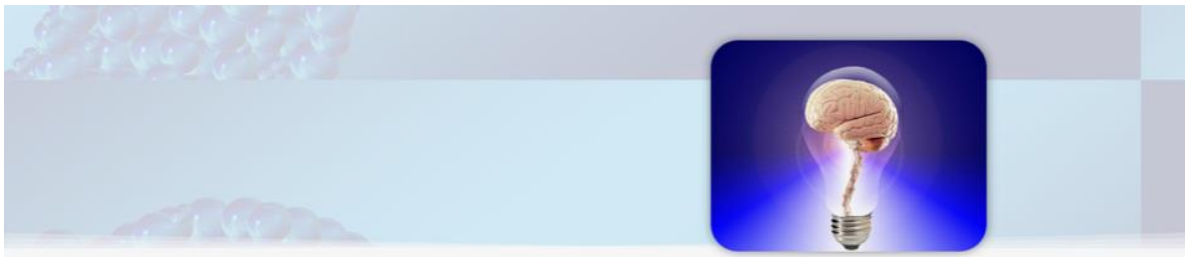
Meer oor die assesserings

Daar is drie opsies om die assesserings te voltooi. Omtrent al die assesserings kan aanlyn gedoen word deur te klik op die 'Voltooi die Aanlyn Assesserings Vorm' in te gaan. Dit sal ongeveer 10 – 15 minute neem om te voltooi. Indien u die assesseringsvorm aanlyn doen, sal die navorser u kontak om mondelings een eenvoudige vorm te voltooi. Dit sal 'n paar minute duur. Indien u verkies, kan u vra dat die navorser u skakel en al die assesserings mondelings te doen. Dit sal ongeveer 15 – 20 minute duur om te voltooi. U kan ook die assesseringsvorms aflaai deur op die Afrikaans Vraelys aflaai' knoppie te druk, dit in te vul, en daarna per e-pos aan ons aan te stuur. As u dit so doen, sal die navorser u kontak om een mondelingse assessering te doen.

Wat behels dit?

Indien u bereid is om deel te wes van die navorsing, sal 'n navorser u per telefoon kontak om die toestemmingsvorms te bespreek en u dan vra vir u handtekening. U sal 'n paar eenvoudige assesserings ook moet doen. U hoef nie hiervoor voor te berei nie aangesien dit nie gaan oor die toetsing van u intelligensie of hoeveel u weet nie – dit is meestal om dinge te noem en te beskryf. U sal ook sekere eenvoudige en reguit vrae oor uself en u daaglikse aktiwiteite en lewe oor die algemeen gevra word. Die laaste gedeelte van u betrokkenheid gebeur op drie agtereenvolgende dae waartydens 'n navorser u sal skakel op 'n vooraf bepaalde tyd soos deur julle ooreengekom. Die kontak sal drie keer per dag plaasvind – eenmaal in die oggend, eenmaal laat namiddag, en eenmaal in die aand. Hierdie oproepe sal baie kort wees, en slegs om te hoor hoe dit gaan en hoe u voel.

(Part 2/2)



Indien jy aan die studie deelneem, kan jy een van 4 x R500 geskenkbewyse wen!
Die gelukkige wenners kan een van die volgende geskenbewyse kies:

Woolworths | Incredible Connection | Pick 'n Pay | Exclusive Books | Takealot.com | Checkers | Yuppie Chef

Sou u wil belangstel om deel te neem aan hierdie navorsing, kontak asseblief een van die twee navorsers of deur e-pos, Whatsapp, of deur jou besonderhede hieronder in te vul:

Toestemmingsvorm Aflaai | Webwerf Toestemmingsvorm | Afrikaans Vraelys Aflaai | Webwerf Afrikaans Vraelys

Kontak

Lauren Gardner:

Tel: 074-841-1792
Epos: grdlau006@myuct.ac.za

Savannah Reichardt:

Tel: 064-608-1905
Epos: rchsavo01@myuct.ac.za

hi.bothofyou@gmail.com

Naam *

Telefoon *

Epos *

Ek wil *
Deelneem Meer uitvind

Bykomende boodskap

I'm not a robot reCAPTCHA

Stuur

Appendix C

Consent Form

English version

Dear Volunteer,

Older Adults and Social Media Use

What is this study about?
A research study is a way to learn more about something. As you may be aware, people are using social media more and more, and Facebook is especially popular. However, we know very little about the effects of Facebook use on mood, sleep, relationships, and other things that are important to people. A team of researchers from the University of Cape Town (UCT) is investigating Facebook use by older adults.

Who can take part in the study?
Adults aged between 50 and 75 years who speak English and/or Afrikaans, and who regularly use Facebook (i.e., at least five times a week), may take part in this study. Unfortunately, you will not be able to take part in this study if you have any serious mental illnesses, such as depression, or have a neurological disorder, such as dementia.

What will happen if you agree to take part in this study?
If you agree to take part in the study, first, a researcher will contact you over the phone and ask you some simple and straightforward questions about you, your daily activities, how you feel about yourself and your life in general. You will also do some activities like naming things and describing things to us. You do not have to prepare for this as it is not about testing your intelligence or how much you know. In fact, you are not expected to get everything correct. All you will be asked to do is your best and try and answer the questions as accurately as possible. This should take about 40 minutes to complete.

Second, the researcher will then phone you on three consecutive days at agreed times on each of these days; once in the morning, once in the late-afternoon, and once in the evening. These will be very short phone calls to see how you are doing and feeling.

What will happen to the information you give us?
All information you give to us will be kept strictly confidential and no personal information, such as names, will be included in the research report. Each participant will be assigned a random number which will help ensure anonymity. All data will be securely stored both electronically (i.e., in the cloud), only accessible by a password protected computer, and under physical lock and key where only the researchers will have access to it.

Are there any kind of costs or benefits involved in participating in this study?
You do not have to pay anything to take part in this study, and you will not incur any personal costs (e.g., airtime). In addition, there are no risks of social, psychological, or physical harm.

As an incentive for you to participate, once we have completed the telephonic interviews with everyone, we will raffle 4 x R500 vouchers. If you are a lucky winner, you will be able choose between a voucher for Woolworths, Incredible Connection, Pick ‘n Pay, Exclusive Books, Takealot, Checkers, or Yuppiechef.

Should you want it, a summary report will be sent to you when the study is complete.

Do you have to take part in the study?
You do not have to take part in the study. It is up to you to decide whether you want to take part or not. If you decide to participate, please type or write your name on this form. Once complete, please return the signed form either as a Word document, scan, or photo via email or WhatsApp.
You can also click “I agree” on the online consent form, on the website.

If you sign the form, and then you decide you no longer want to participate, you can stop at any time during the research process. All you must do is tell the researcher you do not want to be part of this study anymore, and you do not have to give reasons for your withdrawal. You will be allowed to choose whether the information you have already given can be used by the researchers or not.

What if you have any questions?
If you have any questions about this study, you can ask the researcher during the telephone calls, or you can contact:

- Lauren Gardner (grdlau006@myuct.ac.za; 074-841-1792) or
- Savannah Reichardt (rchsav001@myuct.ac.za; 079-036-3747)

You can also contact Ms. Rosalind Adams between 08h30 and 16h30 on weekdays if you have any more questions regarding research in the UCT Department of Psychology (rosalind.adams@uct.ac.za; 021 650 3417).

If you agree to take part in this study and you understand what has been explained to you above, please fill out the information below (write or type):

Name: _____

Signature: _____

Date: _____

Afrikaans version

Geagte Vrywilliger,

Ouer Volwassenes en Gebruik van Sosiale Media

Waaroor gaan hierdie studie?

‘n Navorsings studie is ‘n manier om meer te leer oor iets. Soos u bewus is, gebruik mense sosiale media al hoe meer, en Facebook is besonder gewild. Ons weet baie min wat die effek van Facebook-gebruik is op stemming, slaap, betrekkings, en ander dinge wat vir mense belangrik is. ‘n Span navorsers van die Universiteit van Kaapstad doen navorsing in verband met die gebruik van Facebook deur ouer volwassenes.

Wie kan aan hierdie studie deelneem?
Volwassenes tussen die ouderdomme van 50 en 75 jaar wie Engels of Afrikaans magtig is, en wie ‘n Facebook profiel het, mag aan hierdie studie deelneem.Indien u enige ernstige geestesongesteldheid, soos depressie, of enige neurologiese afwyking soos demensie het, sal u ongelukkig nie aan hierdie studie kan deelneem nie.

Wat sal gebeur as u instem om deel te neem aan hierdie studie?
As u instem om deel te neem aan die studie, sal 'n navorser u eerstens telefonies kontak en eenvoudige en reguit vrae oor uself vra; oor u daaglikse aktiwiteite, hoe u oor uself en u lewe oor die algemeen voel. U sal ook sommige aktiwiteite doen soos om dinge te noem en te beskryf. U sal nie vir ‘n “toets” moet voorberei nie, aangesien ons nie u verstand, of hoeveel u weet, wil toets nie. Die feit is daar word nie van u verwag om alles korrek te doen nie. Al wat gevra word is om u bes te doen en die vrae so akuraat as moontlik te beantwoord. Die hele telefoniese onderhoud sal omtrent 40-minute duur.

Tweedens sal die navorser u op drie agtereenvolgende dae bel. Op elkeen van hierdie dae sal sy u bel op ‘n voorafgereelde tyd; een keer soggens, eenkeer laat middag, en een keer saans. Hierdie sal baie kort oproepe wees, want sy wil slegs vasstel hoe u vorder en voel.

Wat gaan gebeur met die inligting wat u aan ons gee?
Alle inligting is streng konfidensieel, en geen persoonlike inligting sal by die navorsingsprojek ingesluit word nie. Elke deelnemer sal ‘n nommer gegee word sodat alle inligting anoniem bly. Alle data sal veilig gestoor word beide elektronies (d.w.s. in die "cloud"), toeganklik met 'n wagwoord-beskermde rekenaar, en onder fisieke slot en grendel waar slegs die navorsers toegang daartoe sal hê.

Is daar enige koste verbonde aan die deelname van die studie?
Daar is geen koste verbonde aan die deelname van die studie en geen persoonlike koste (soos bv. lugtyd vir selfoon, ens.) sal nodig wees om aan te gaan nie. Daar is verder ook geen risiko verbonde aan u sosiale, sielkundige of fisies omstandighede nie.

As aanmoediging vir u deelname sal ons, na voltooing van al die telefoniese onderhoude, 4 x R500 koopbewyse uitloot. Indien u een van die gelukkige wenners sou wees, sal ons u 'n koopbewys gee wat u kan kies vanuit een van die volgende verskaffers: Woolworths, Incredible Connection, Pick n Pay, Exclusive Books, Takealot, Checkers of Yuppiechef.

Indien u so verlang sal ons 'n opsommingsverslag vir u laat kry sodra die studie voltooi is.
Indien u later besluit dat u nie meer aan die studie wil deelneem nie, het u net nodig om een van die navorsers dienooreenkomstig in kennis te stel. Die opsie is ook beskikbaar self gedurende die navorsing, en geen redes vir u besluit is benodig nie. Indien u besluit om nie verder deel te neem nie, sal u nog steeds die opsie hê om te besluit of die inligting wat reeds opgeneem is verder gebruik mag word of nie.

Moet u aan hierdie studie deelneem?
U hoef nie deel te neem nie. Dit is u eie besluit of u wil deelneem of nie. As u graag wil deelneem, tik of skryf u naam op hierdie vorm. Geliewe dan asseblief die getekende vorm terug as 'n voltooide Woord dokument, 'n skandering, of 'n foto, per epos, of WhatsApp, aan ons. U kan ook bevestig dat U dit aanvaar deur die blokkie op die toestemmingsform op die webbladsy af te merk.

Indien u die dokumente nou onderteken, en later van besluit sou verander, al wat u hoef te doen is om ons dienooreenskomstig te laat weet dat u nie meer belangstel nie. Daar sal geen gevolge wees nie.

As u enige vrae het?
As u enige vrae het omtrent hierdie studie, mag u die navorser daaroor uitvra tydens die telefoon oproepe, of kontak:

- Lauren Gardner (grdlau006@myuct.ac.za; 074-841-1792) of
- Savannah Reichardt (rchsav001@myuct.ac.za; 079-036-3747).

U kan ook Ms. Rosalind Adams tussen 08h30 en16h30 weeksdae kontak by die Universiteit van Kaapstad, Departement van Sielkunde (rosalind.adams@uct.ac.za; 021 650 3417) as u verdere vrae het in verband met hierdie navorsing.

Indien u toestem om aan hierdie studie deel te neem, en u verstaan wat aan u verduidelik is, geliewe u naam hieronder te skryf en te onderteken.

Naam: _____

Handtekening: _____

Datum: _____ _____

Appendix D

Demographic Questionnaire

English version

Full name:			
Date of Birth:	YYYY	MM	DD
Test Date:	YYYY	MM	DD
What sex are you?	☐ Male ☐ Female ☐ Other ☐ I would prefer not to answer		
Where do you live? (Specify: country, and closest town/city)			
What is the highest level of school education that you have completed?	☐ Primary ☐ Secondary ☐ Tertiary		
What is your current living arrangement?	☐ Live alone ☐ Live with partner ☐ Live with family ☐ Live with non-family ☐ Live alone but in a communal setting		
Are you retired?	☐ Yes ☐ No		
Are you dependent on welfare?	☐ Yes ☐ No ☐ I would prefer not to answer		
What is/was your occupation?			

Afrikaans version

Volle naam:			
Geboortedatum:	YYYY	MM	DD
Toetsdatum:	YYYY	MM	DD
Wat is u geslag?	☐ Manlik ☐ Vroulik ☐ Ander ☐ Ek verkies om nie te antwoord nie		
Waar woon u? (Spesifiseer: land, en naaste dorp/stad)			
Wat is die hoogste skool-opvoeding wat u voltooi het?	☐ Primêr ☐ Sekondêr ☐ Tersiêr		
Wat is u lewens omstandigehede?	☐ Woon alleen ☐ Woon saam met metgesel ☐ Woon saam met familie ☐ Woon saam met nie-familie ☐ Woon alleen, maar in ‘n gemeenskaplike instelling		
Is u afgetree?	☐ Ja ☐ Nee		
Is u afhanklik van welsyn?	☐ Ja ☐ Nee ☐ Ek verkies om nie te antwoord nie		
Wat is/was u beroep?			

Appendix E

Facebook Use Questionnaire

English version

A. Facebook Profile

1. How long have you been a Facebook user? _____

2. How many Facebook friends do you have?

- ☐ 1-30
- ☐ 31-60
- ☐ 61-90
- ☐ 91-120
- ☐ 121-150
- ☐ 150+

3. From 0 to 100, how important is Facebook to you? With 0 being unimportant, and 100 being very important. _____

B. Reasons for Using Facebook

Think about the purposes you currently use Facebook for and tick "yes" or "no" for the statements below.

1. To keep in touch with friends

   - ☐ Yes
   - ☐ No

2. To find new friends

   - ☐ Yes
   - ☐ No

3. To share good things with friends

   - ☐ Yes
   - ☐ No

4. To share bad things with friends

   - ☐ Yes
   - ☐ No

5. To obtain new information

   - ☐ Yes
   - ☐ No

6. To access news

   - ☐ Yes
   - ☐ No

7. Other (please explain):

Afrikaans version

A. Facebook Profiel

1. Hoe lank is u al a Facebook gebruiker? _____

2. Hoeveel vriende het u op Facebook?
   - ☐ 1-30
   - ☐ 31-60
   - ☐ 61-90
   - ☐ 91-120
   - ☐ 121-150
   - ☐ 150+

3. Van 0 tot 100, hoe belangrik is Facebook vir jou? Met 0 as onbelangrik, en 100 as baie belangrik. _____

B. Redes vir die Gebruik van Facebook

Dink aan die huidiglike doeleindes vir jou gebruik van Facebook, en merk "ja" or "nee" vir die redes hieronder:

1. Om kontak te behou met vriende

   ☐ Ja
   ☐ Nee

2. Om nuwe vriende te vind

   ☐ Ja
   ☐ Nee

3. Om goeie dinge met vriende te deel

   ☐ Ja
   ☐ Nee

4. Om slegte dinge met vriende te deel

   ☐ Ja
   ☐ Nee

5. Om nuwe informasie te verkry

   ☐ Ja
   ☐ Nee

6. Om toegang tot nuus te verkry

   ☐ Ja
   ☐ Nee

7. Ander (verduidelik asseblief):

Appendix F

Subjective Wellbeing Questionnaire

English version

1. On a scale of 0 (bad) – 100 (good), how do you feel right now?
2. Why do you feel like this?
3. On a scale of 0 (bad) – 100 (good), how lonely do you feel right now?
4. Why do you feel like this?

Afrikaans version

1. Op ‘n skaal van 0 (sleg) – 100 (goed), hoe voel jy op die oomblik?
2. Waarom voel jy so?
3. Op ‘n skaal van 0 (sleg) – 100 (goed), hoe eensaam voel jy op die oomblik ?
4. Waarom voel jy so?

Appendix G

Daily Activity Record Questionnaire

English version

Facebook Use

Did you use Facebook today?	☐ Yes ☐ No
Approximately how much time did you spend on Facebook today?	☐ None ☐ Less than 10 minutes ☐ Between 10-20 minutes ☐ Between 20-30 minutes ☐ Between 30-60 minutes ☐ Longer than an hour
What did you do on Facebook today? (You can select multiple answers)	☐ "Like" posts by friends and/or family  ☐ "React" to posts by friends and/or family  ☐ Comment on posts by friends and/or family ☐ "Like" posts on groups ☐ "React" to posts on groups ☐ Comment on posts on groups ☐ "Direct message" a fellow Facebook user ☐ Post a status update on your Facebook page ☐ Share a post to or from your Facebook page ☐ Scroll through your Facebook feed (without commenting, "reacting" and/or "liking") ☐ Look at news and/or informational posts ☐ Watch video clips on your Facebook feed ☐ Video and/or audio call with a fellow Facebook user

Internet Activity

Which other digital media platforms did you use today? (You can select multiple answers)	☐ None. ☐ WhatsApp ☐ Snapchat ☐ Twitter ☐ Instagram ☐ LinkedIn ☐ Pinterest ☐ Dating sites ☐ YouTube

Personal Activity Profile:

Did you interact with a friend or family member today? (If yes, you can select multiple answers)	Yes (specify): ☐ On a phone call ☐ Via instant messaging (e.g., WhatsApp and SMS) ☐ On a video call ☐ Via email ☐ In person ☐ No
Did you interact with people other than family or friends today? (If yes, you can select multiple answers)	Yes (specify): ☐ On the phone ☐ On WhatsApp/SMS ☐ On a video call ☐ In person ☐ No
Approximately, how many different people did you talk to today?	
Did you leave your home today?	☐ Yes ☐ No
Did you attend any community gathering today?	☐ Yes (specify): _____ ☐ No
Did you exercise today?	☐ Yes ☐ No
Do you have any pets?	☐ Yes ☐ No

Afrikaans version

Facebook Gebruik

Het u vandag Facebook gebruik?	☐ Ja ☐ Nee
Na beraming, hoeveel tyd het u vandag op Facebook gespandeer?	☐ Geen ☐ Minder as 10 minute ☐ Tussen 10-20 minute ☐ Tussen 20-30 minute ☐ Tussen 30-60 minute ☐ Langer as ‘n uur
Wat het u vandag of Facebook gedoen? (U kan veelvuldige antwoorde kies)	☐ “Like” poste van vriende of familie  ☐ “React” op poste van vriende of familie  ☐ Komentaar lewer op poste van vriende of familie ☐ “Like” poste op groep poste ☐ “React” op groep poste ☐ Komentaar lewer op groep poste ☐ “Direct message” aan ‘n mede Facebook gebruiker stuur ☐ Pos ‘n status opdateering op u Facebook bladsy ☐ Deel ‘n pos aan of van u Facebook bladsy ☐ Blaai deur u Facebook-voer (sonder om te komentaar, “react” en/of “like”) ☐ Kyk na nuus en/of inligtings poste ☐ Kyk na videogrepe op Facebook ☐ Video en/of audio oproep met 'n mede Facebook gebruiker

Internet Activity

Watter ander digitale media platforms het u vandag gebruik? (U kan veelvuldige antwoorde kies)	☐ Geen ☐ WhatsApp ☐ Snapchat ☐ Twitter ☐ Instagram ☐ LinkedIn ☐ Pinterest ☐ 'Dating' webwerf ☐ YouTube

Personal Activity Profile:

Het u vandag interaksie met 'n vriend of familielid gehad? (U kan veelvuldige antwoorde kies)	Ja (spesifiseer): ☐ Op 'n foon ☐ Via kitsboodskappe (bv., Whatsapp en SMS) ☐ Op 'n video-oproep ☐ Op e-pos ☐ Persoonlik ☐ Nee
Het u vandag interaksie met mense gehad buiten vriende of familie? (U kan veelvuldige antwoorde kies)	Ja (spesifiseer): ☐ Op 'n foon ☐ Via kitsboodskappe (bv. Whatsapp en SMS) ☐ Op 'n video-oproep ☐ Op e-pos ☐ Persoonlik ☐ Nee
Na beraming, met hoeveel verskillende mense het u vandag gepraat?	
Het u die huis vandag verlaat?	☐ Ja ☐ Nee
Het u enige gemeenskapsbyeenkoms vandag bygewoon?	☐ Ja (spesifiseer): _____ ☐ Nee
Het u vandag oefeninge gedoen?	☐ Ja ☐ Nee
Het u enige troeltediere?	☐ Ja ☐ Nee

Appendix H

Loneliness Follow-up Questionnaire

English version

From 0 to 100, how would you rate how you feel right now? With 0 being very lonely, and 100 being not lonely at all.

1. How lonely do you feel? _____
2. How connected to others do you feel? _____
3. Compared to others' lives:
    a. How much better do you feel? _____
    b. How much worse do you feel? _____

Afrikaans version

Evalueer jouself soos wat jy huidiglik voel. Met 0 as jy baie alleen voel, en 100 as jy glad nie alleen voel nie.

1. Hoe eensaam voel jy? _____
2. Hoe voel jy is jou verbintenis met ander? _____
3. In vergelyking met ander se lewens:
    a. Hoeveel beter voel jy? _____
    b. Hoeveel slegter voel jy? _____

Appendix I

Summary Report

Aging populations and changing geographic settlement trends mean increasing numbers of older adults are deprived of regular social contact, which is a core contributor to enhancing overall mental and physical health, improving subjective wellbeing, and, particularly, alleviating loneliness. However, social media is rapidly changing the way people interact and offering increased opportunities for personal connection. Previous research suggests that active engagement (i.e., acting in ways that facilitate direct exchanges) rather than passive use (i.e., consuming content without direct exchanges) on Facebook can lead to better subjective wellbeing and decreased loneliness.

Our longitudinal study investigated whether older adults who used Facebook more actively than passively exhibited higher levels of subjective wellbeing and lower levels of loneliness. Each of 120 participants (age range 48–78 years) was contacted telephonically three times a day on 3 consecutive days. During these phone calls, data was collected on feelings of subjective wellbeing and loneliness, as well as how they had used Facebook during the day.

Lagged regression modelling indicated that, over the 3 days, subjective wellbeing and loneliness were unlikely to be affected by how active Facebook use was. Additional analyses suggested that time spent on Facebook may influence the relationship between degree of active Facebook use and subjective wellbeing.

Our research contributes to knowledge about how the type of Facebook engagement (active/passive) may, over a short period of time, influence feelings of subjective wellbeing and loneliness in older adults. We suggest that, in order to enhance understanding of shifts in psychological outcomes such as subjective wellbeing and loneliness, future longitudinal studies on Facebook engagement should extend over longer periods of time.