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Pit, Ilse L.; Veling, Harm; Karremans, Johan C.

Article

Does Passive Facebook Use Promote Feelings of Social Connectedness?

Ilse L. Pit [1,2,3,*], Harm Veling [1,4], and Johan C. Karremans [1]

[1] Behavioural Science Institute, Radboud University, The Netherlands
[2] Institute of Human Sciences, University of Oxford, UK
[3] Calleva Research Centre for Evolution and Human Sciences, Magdalen College, UK
[4] Consumption and Healthy Lifestyles, Wageningen University and Research, The Netherlands

* Corresponding author (ilse.pit@anthro.ox.ac.uk)

Abstract
Previous research has shown that passive social media use does not have the same positive effects on well-being as active social media use. However, it is currently unclear whether these effects can be attributed to the benefits of active use, the costs of passive use, or both. The current article investigated the effect of active and passive Facebook use on feelings of social connectedness after being ostracized. In two preregistered experiments, participants were first ostracized on a faux social media platform, followed by a measurement of social connectedness. In Experiment 1 they were then instructed to either use Facebook passively, use Facebook actively, or use a non-social website (Wikipedia), after which social connectedness was measured again. Results indicated that active Facebook use can restore social connectedness after being ostracized as compared to using a non-social website. While passive Facebook use also restored social connectedness, it did not change social connectedness significantly more so than Wikipedia use. In Experiment 2, we replicated Experiment 1, now focusing only on passive Facebook use compared to a non-social website. Results showed again that passive Facebook use did not influence social connectedness more so than the use of Wikipedia. In exploratory analyses, we found that for participants who felt close to other Facebook users, passive Facebook use did increase social connectedness compared to using a non-social website. These experiments suggest that, even though passive social media use does not restore social connectedness in the same way that active social media use does, it also does not harm social connectedness, and it may actually promote social connectedness under certain circumstances.

1. Introduction

The feeling of belonging and social connectedness is often considered a fundamental human need (Baumeister & Leary, 1995; Lee & Robbins, 1995; van Bel et al., 2009). When needs are thwarted, like when we are socially excluded, contact with close others can help restore feelings of social connectedness (Karremans et al., 2011). Just like social interactions and relationships in the offline world, feelings of social connectedness can be lowered

(e.g., Wolf et al., 2015) as well as derived from online contact (e.g., Grieve et al., 2013). Indeed, some previous research findings suggest that more frequent use of social network sites, such as Facebook, tends to be related to higher perceptions of social connectedness (e.g., Knowles et al., 2015; for a review including some negative effects of social media use, see also Ryan et al., 2017).

However, not all social network use is similar. One important distinction that can be made is whether social networks are used actively or passively (Verduyn et al.,

2015). Active Facebook use refers to activities that facilitate direct exchanges with other people on Facebook, like posting content and reacting to others' posts. Passive Facebook use refers to the consumption of content without direct exchanges with others, like merely viewing others' posts. Out of 2.9 billion Facebook users worldwide, only 43% indicate that they actively contribute content to the platform every month (Global Web Index, 2015; Meta, 2021), meaning the remaining majority of Facebook users consume content passively.

Active Facebook use can increase social connectedness by facilitating information sharing with one's social network (Köbler et al., 2010), and by increasing the perception of being part of a large group of people (Gross & Acquisti, 2005). It can therefore be linked to strengthening existing social relationships and building social capital (i.e., increasing the value derived from social connections; Koroleva et al., 2011). In short, active Facebook use allows people to strengthen existing relationships and build new ones.

Theory and empirical findings regarding *passive* Facebook use, however, provide a more mixed view, with both negative and positive outcomes. Passive use has been linked to negative outcomes in that it might lead to increased upward social comparison: Seeing others' seemingly perfect lives portrayed on social media might lead to feelings of envy (Verduyn et al., 2017) and less perceived support by friends (Frison & Eggermont, 2020). At the same time, like active use, passive Facebook use could also increase feelings of social connectedness. Passive Facebook use might provide social reminders in times of low social connectedness, like seeing photos of loved ones or reading letters (Gardner et al., 2005; Knowles et al., 2015). This has been referred to as "social snacking" (Gardner et al., 2005). Reading Facebook friends' posts can predict feeling close to that friend, equally to receiving messages from the same friend (Burke & Kraut, 2014), and feelings of social connection to Facebook friends can be predicted by intimacy in Facebook friends' status updates (Utz, 2015). However, these feelings are more pronounced if participants also "like" the Facebook friend's status update, thus using Facebook more actively. Finally, even just seeing the Facebook logo, as compared to seeing the Flash Player logo, seems to restore feelings of social connectedness after being rejected (Knausenberger et al., 2015). Thus, similar to having one's smartphone close by (Hunter et al., 2018), or feeling intimacy towards Twitter users (Lin et al., 2016), passive Facebook use might be able to increase feelings of social connectedness, by providing "social snacks."

Several studies have looked into the difference between the effect of active and passive Facebook use on feelings of social connectedness. Große Deters and Mehl (2013) found that instructing participants to post more updates on Facebook reduced their loneliness, which explained increased felt connectedness and being in touch with friends. Tobin et al. (2015) found

that making participants use Facebook less actively was related to lower levels of belonging. Furthermore, Burke et al. (2010) found a positive correlation between passive Facebook use and feelings of loneliness (see also Thorisdottir et al., 2019). These studies suggest that active Facebook use can increase social connection, whereas passive Facebook use is related to adverse effects.

On the surface, the above-mentioned studies may seem inconsistent: Some studies suggest that passive Facebook use can promote social connectedness, whereas other studies suggest that passive Facebook use can hurt social connectedness. The body of research looking at differential effects of active and passive Facebook use, however, has only *compared active to passive Facebook use* but has to our knowledge not investigated the effect of passive Facebook use *relative to not using Facebook*. This makes it difficult to draw conclusions: Is active Facebook use indeed associated with positive outcomes, whereas passive use is associated with negative outcomes—as is often claimed (see Verduyn et al., 2017)? Or is it possible that both active and passive Facebook uses increase social connectedness, and that active Facebook use simply does so to a larger extent? The aim of the current research is to gain insight into the effect of passive Facebook use on feelings of social connectedness by comparing it to both active Facebook use and a control condition without Facebook use.

In two experimental studies, we examined the effects of Facebook use on feelings of social connectedness as compared to the use of a non-social website. In these experiments, participants used a faux social network site in which they were being ostracized by the other players, with the intent of lowering their feelings of social connectedness (Williams, 2009; Wolf et al., 2015). The rationale here is that this would minimize pre-existing differences between participants in their feelings of belongingness, and it creates room for the possible effect of Facebook use on social connectedness. After being ostracized, participants used Facebook actively or passively or used a non-social website.

We expected that active Facebook use, passive Facebook use, and the use of a non-social control website would differently influence perceived social connectedness after ostracism (H1). Moreover, we tested the directional hypothesis that active Facebook use would have a more positive influence on feelings of social connectedness compared to the use of a non-social website (H2; große Deters & Mehl, 2013), and compared to passive Facebook use (H3; e.g., Burke et al., 2010). Finally, in line with the finding that cues of social bonds increase feelings of social connectedness (Gardner et al., 2005; Knowles et al., 2015), and in line with research that found indications of a positive effect of passive Facebook use on perceived social connectedness (Burke & Kraut, 2014; Utz, 2015), we expected that passively using Facebook would increase feelings of social connectedness as compared to the use of a non-social website (H4).

2. Experiment 1

2.1. Methods

Our procedure, exclusion criteria, and confirmatory analyses were preregistered on the Open Science Framework (see Supplementary File). Both Experiments 1 and 2 were approved by the Ethics Committee of Social Science at Radboud University (Reference No. ECSW2016–2811-43).

2.1.1. Participants

An a priori power analysis for our mixed linear effects model was done by simulating data with information from past studies on ostracism and Facebook Use (Tobin et al., 2015; Zadro et al., 2004). A thousand samplings from these simulated data per N (ranging from 20 to 300) yielded that a sample of 207 participants would be needed to find a significant interaction effect at $p < 0.05$ with a power of 0.80 (see S3 in the Supplementary File).

A total of 358 participants completed the experiment online, of which 209 participants (58.3%) were left after excluding participants (n_{Active} = 71, $n_{Passive}$ = 69, and $n_{Control}$ = 69; see S3 in the Supplementary File). Participants needed to be able to read and write in English, use a Windows operating system, and have a Facebook account. We recruited participants through both Prolific (www.prolific.co; n = 160) and Radboud University Sona Systems (n = 49), and they were granted respectively £2.10, or course credit, for their participation. The sample consisted of 111 men, 97 women, and 1 other, ranging from 18 to 61 years old (M = 28.1, SD = 9.7), and resided in 29 different countries, with most participants coming from the UK (19.6%; n = 41) and the Netherlands (17.7%; n = 37).

2.1.2. Manipulations and Measures

In order to lower the participants' perceived social connectedness, participants were redirected to an adjusted version of the "ostracism online" paradigm by Wolf et al. (2015). In this validated paradigm, participants create a short profile on a website and are then led to believe they are connected to other people on a webpage. They can then view their own and 11 other faux participants' profiles, with the ability to "like" these profiles. In the exclusion condition of this paradigm, to which all participants were assigned, the webpage was programmed in such a way that participants only received one "like" on their profile, while the other profiles received multiple "likes" over the course of three minutes. In a pilot study, we found evidence that this paradigm successfully lowered participants' perceived social connectedness as compared to the inclusion condition of the same paradigm (see S1 in the Supplementary File).

In order to manipulate Facebook Use, participants were randomly assigned to one of three conditions:

Passive Facebook Use, Active Facebook Use, or the Control. Participants were asked to click on a provided link to either Facebook (https://facebook.com) or the English homepage of Wikipedia, a free online encyclopedia (https://en.wikipedia.org/wiki/Main_Page). Wikipedia was chosen as the Control after a pilot study (see S2 in the Supplementary File). Participants in the Passive Facebook Use Condition were instructed to browse their Facebook news feed and their own and friends' profile pages, but not to "like" or comment on any posts, or respond to any messages. Participants in the Active Facebook Use Condition were also instructed to browse their news feed and their own and friends' profiles and were told to "like" at least three of their friends' posts and leave at least one comment on a friend's post. Participants in the Control Condition were instructed to browse and view different articles on Wikipedia. After five minutes, upon an audio signal, participants returned to the survey.

To measure Perceived Social Connectedness, six items of the revised social connectedness scale (Lee et al., 2001) were listed with a temporal anchor (e.g., "Right now, I feel close to people" and "Right now, I don't feel related to most people"; see S4 in the Supplementary File). Every item was followed by a slider ranging from "strongly disagree" to "strongly agree," coded from 1 to 100. This measure was administered before and after the Facebook Use manipulation. After mirroring the relevant items, average Pre- and Post-Measures of Perceived Social Connectedness were calculated across all items (α_{pre} = 0.89, α_{post} = 0.89).

Furthermore, in order to objectively check that participants used Facebook during the experiment as instructed, they were asked to use a program created by the researchers to take screenshots of their Facebook activity log (see S4 in the Supplementary File). The Facebook activity log is a page within a person's personal Facebook account in which they can view the post, comments, and "likes" they have shared on Facebook with a timestamp. Screenshots were coded by counting "likes," comments, and posts by the participant, as seen in the participants' Facebook activity log during the time of the experiment. This information was used to exclude participants who did not use Facebook as instructed (see S3 in the Supplementary File).

To gain insight into whether participants were aware of the purpose of the study after participating in it, we used a funnel debriefing with four open questions (adjusted from Chartrand & Bargh, 1996; see S4 in the Supplementary File). Participants were also asked whether they interacted with any other person during the study. If they answered yes, they were asked to indicate whether this was in person, through a phone, through instant messaging, and/or otherwise.

2.1.3. Procedure

Participants were recruited to take part in a Qualtrics survey and were informed that we were interested in

how they experienced different websites. The ostracism paradigm, disguised as the website ConnectMe was presented first, followed by the Pre-Measure for Perceived Social Connectedness. In line with the cover story, participants were also asked how much they liked using this website with two filler items. Next, participants were presented with the Facebook Use manipulation, followed by the Post-Measure of Perceived Social Connectedness. Again, two filler items asked participants how much they liked using the website. All participants were then asked to use the screenshot program to take screenshots of their Facebook activity log. This was followed by a page with demographic questions (gender, age, and country of residence), funnel debriefing questions, and the questions about interacting with others during the study. Finally, participants were debriefed about their lack of "likes" on ConnectMe and about the purpose of the study and were given the option to leave remarks for the researchers. In total, the experiment took approximately 25 minutes to complete.

2.2. Results

We tested a linear mixed-effects model on the data with Facebook Use (Active/Passive/Control) and Time (Pre-/Post-Measurement) as independent variables, Perceived Social Connectedness as a dependent variable, and Participant as a random factor. The model included a fixed intercept, fixed effects for the factors Facebook Use, Time, the interaction between Facebook Use and Time, and a per-Participant random adjustment to the intercept. The factors were coded using sum-to-zero contrasts. For the factor Facebook Use the Control was always coded as −1, and the factor Time

the Pre-Measure was always coded as −1. In order to determine p-values, we used Type 3 tests and the parametric bootstrap method with 1,000 simulations using the packages "lme4" (Bates et al., 2014) and "afex" (Singmann et al., 2017) in R (R Core Team, 2016). Note that, as we used parametric bootstrapping, the p-value slightly changes each time the model is run, and our reported p-values are estimates. See Figure 1 for the plotted means and standard errors.

Supporting H1, we found a significant interaction between Facebook Use and Time (beta$_{Active}$ = 1.46(0.90), beta$_{Passive}$ = 0.59(0.90), $\chi^2(2)$ = 5.51, $p \approx 0.050$). Further analyses on subsets of the data revealed that the effect of Active Facebook Use on increases in Social Connectedness over Time differed significantly from the Control (H2), as indicated by a significant interaction between Facebook Use (Active use vs. Control Condition) and Time (beta = 1.76(0.76), $\chi^2(1)$ = 5.35, p = 0.022). Moreover, relevant to H3, the effect of Time did not differ between the Active and Passive Facebook Use Condition as indicated by a non-significant interaction between Facebook Use (Active vs. Passive Use) and Time ($\chi^2(1)$ = 0.32, p = 0.573). We further found that the interaction between Facebook Use (Passive Use vs. Control) and Time, testing whether the increase in Social Connectedness in the Passive Facebook Use Condition differed from the Control (H4), did not reach significance ($\chi^2(1)$ = 2.69, p = 0.094). Finally, the simple main effects of Time were significant for both Active (beta = 4.53(1.03), $\chi^2(1)$ = 17.38, $p < 0.001$) and Passive Facebook Use (beta = 3.65(1.165), $\chi^2(1)$ = 9.31, p = 0.003), and not for the Control ($\chi^2(1)$ = 0.83, p = 0.397; see S6 in the Supplementary File for exploratory analyses).
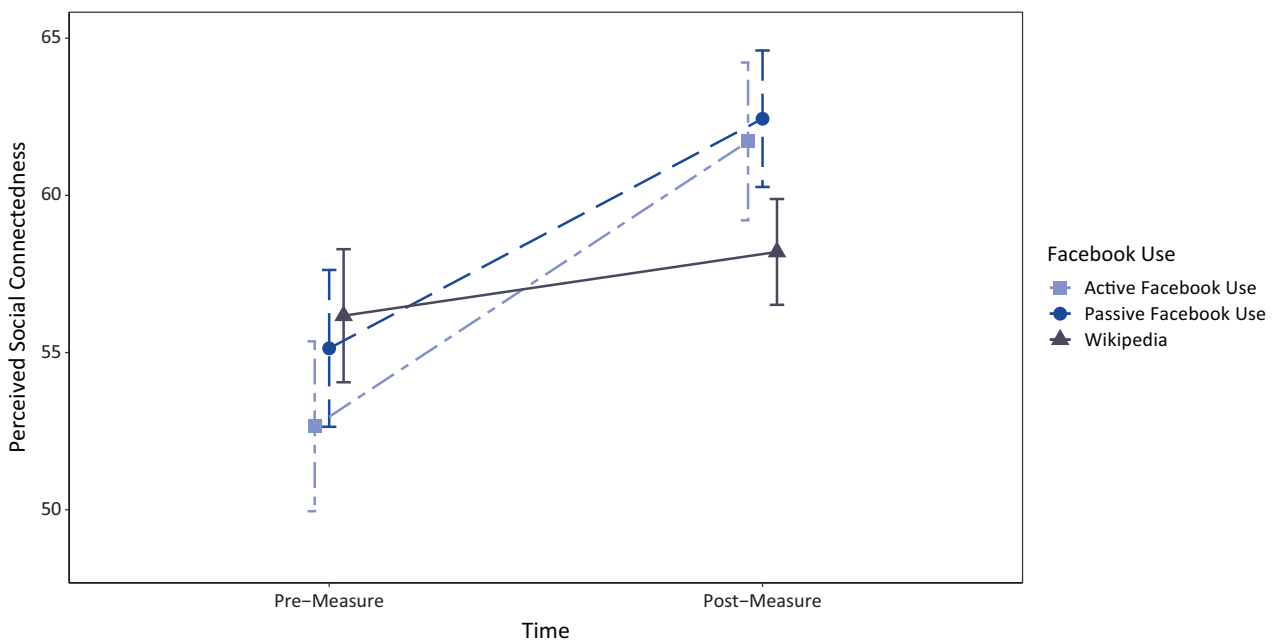

Figure 1. Mean Perceived Social Connectedness per Condition of Facebook Use Over Time for Experiment 1. Note: Standard errors are represented by error bars.

2.3. Discussion

As hypothesized, in Experiment 1 we found that active Facebook use caused a larger increase in perceived social connectedness over time than using a non-social website. We did not find the predicted difference between passive and active Facebook use: The increase in social connectedness was similar in both conditions.

The simple main effect analyses of time showed that participants' social connectedness increased in the passive Facebook use condition, whereas this was not the case for participants using the non-social website; however, we did not find the predicted significant interaction. As the observed pattern was in line with predictions, and the differences were smaller than expected, a larger sample size may be necessary to reliably detect an effect between passive Facebook use and a non-social website.

3. Experiment 2

In Experiment 2, we ran a partial replication of Experiment 1 with higher statistical power, particularly examining the effect of passive Facebook use on perceived social connectedness over time compared to the use of a non-social website. Additionally, we measured variables that might give us insight into the strength and quality of the social cues available to the participants through Facebook. Thus, in Experiment 2 we again test the hypothesis that passive Facebook use has a stronger positive effect on perceived social connectedness than a non-social website (H4). We also hypothesized that the effect of passive Facebook use on social connectedness over time would be positive.

Three possible moderators were explored. First, we measured participants' level of closeness to people encountered on Facebook. It is likely that the effects of passive use on social connectedness are stronger to the extent that one feels closer to others one encounters on Facebook during passive use. Second, we measured the amount of friends participants have on Facebook since people with more friends on Facebook indicate higher levels of perceived social support (Nabi et al., 2013). Finally, we measured the time participants spent on Facebook in a week. Ellison et al. (2007) found that more intense Facebook use is positively related to feelings of social connectedness.

3.1. Methods

3.1.1. Participants

Using a data simulation procedure, we used the means and standard deviations as found in Experiment 1 for the effect of Passive Facebook Use compared to the Control. A thousand samplings from these simulated data per n (ranging from 10 to 1,000) yielded that a sample of 306 participants would be needed to find an effect with $p < 0.05$ and a power of 0.80 (see S7 in the Supplementary File).

Five-hundred-and-twelve participants completed the experiment online, of which 308 participants (60.2%) were left for data analysis after exclusion ($n_{Passive}$ = 153, $n_{Control}$ = 155; see S7 in the Supplementary File). Participants were recruited through Prolific (n = 301) and Radboud University Sona Systems (n = 7) and were granted £2.50 or course credit for their participation. Participants were 150 women, 156 men, and 2 others, ranged from 18 to 77 years old (M = 30.71, SD = 10.92), from 26 different countries, with the most frequently mentioned countries being the UK (49%; n = 151) and the US (22.1%; n = 68).

3.1.2. Manipulations and Measures

Manipulations and measures were mostly the same as in Experiment 1, except that the experiment did not include an Active Facebook Use Condition. Additionally, we measured Closeness to Other Facebook Users with an adjusted version of the Inclusion of Other in the Self Scale (Aron et al., 1992; see S8 in the Supplementary File). This scale consists of seven pairs of circles, which increase in overlap with the increase of the score on the scale. The instructions were: "Out of the following pairs of circles, indicate the pair that best describes your relationship to the people you [just encountered while browsing/usually encounter on] Facebook," for participants in the Passive Facebook Use and Control Conditions respectively. The response to this question was coded as a number ranging from one to seven, with a higher number indicating more Closeness to Other Facebook Users.

To measure Amount of Facebook Friends we presented participants with the open question: "How many total Facebook friends do you have?" Moreover, in order to measure Time Spent on Facebook, we adjusted one item from the Facebook intensity scale by Ellison et al. (2007). This question was: "In the past week, on average, approximately how many minutes per day have you spent on Facebook?" This was presented with six options ranging from "less than 10 minutes" to "more than 3 hours," and scored answers as a value from one to six.

3.1.3. Procedure

The procedure was similar to Experiment 1, with Closeness to Other Facebook Users measured after the Post-Measure of Perceived Social Connectedness, and measures for participants' Amount of Facebook Friends and Time Spent on Facebook added after the demographic questions. In total, participation in the experiment took approximately 30 minutes.

3.2. Results

3.2.1. Confirmatory Analyses

As preregistered, we tested a linear mixed-effects model on the data. Facebook Use (Passive Use/Control) and

Time (Pre-/Post-Measure) acted as the independent variables, with Perceived Social Connectedness as the dependent variable, and Participant as a random factor. The model and factor coding were the same as in Experiment 1. In order to determine p-values, we used Type 3 tests and the parametric bootstrap method with 1,000 simulations. Since we have a one-sided hypothesis, we divided the outputted p-values by two (see S10 in the Supplementary File).

Perceived Social Connectedness increased significantly as a function of Time (beta = 3.36(0.61), $\chi^2(1)$ = 29.21, $p < 0.001$). Also, a significant main effect of Facebook Use was found (beta = −2.48(0.97), $\chi^2(1)$ = 6.57, $p = 0.006$). However, unexpectedly, no significant interaction effect between Facebook Use and Time on Perceived Social Connectedness was found ($\chi^2(1)$ = 0.01, $p = 0.465$). In both the Passive Facebook Use (beta = 3.31(0.92), $\chi^2(1)$ = 12.42, $p < 0.001$) and Control Condition (beta = 3.41(0.80), $\chi^2(1)$ = 17.44, $p < 0.001$) there was a significant increase in Social Connectedness from Pre- to Post-Measure. Thus, H4 was not confirmed. See Figure 2 for the plotted means and standard errors.

3.2.2. Exploratory Analyses

To examine whether Closeness to Other Facebook Users, Amount of Facebook Friends, or Time on Facebook moderated any of the effects as tested above, we standardized these variables and included them as predictors in the model as tested in H4 (see S10 in the Supplementary File). All main effects and interactions between dependent variables were entered into the model. The only significant three-way interaction with Facebook Use Over Time was Closeness to Other Facebook Users

(beta = 2.50(0.64), $\chi^2(1)$ = 15.96, $p = 0.002$). Number of Facebook Friends and Time on Facebook both did not have significant main effects or interaction effects with Time or Facebook Use on Perceived Social Connectedness and were therefore dropped (all $p > 0.05$).

We finally ran the same model again with only the main and interaction effects of Closeness to Other Facebook Users, Facebook Use, and Time on Perceived Social Connectedness. There was a significant interaction between Facebook Use, Time, and Closeness to Other Facebook Users (beta = 2.39(0.59), $\chi^2(1)$ = 16.36, $p < 0.001$; see S10 in the Supplementary File for main effects). The interaction is depicted in Figure 3. In the Passive Facebook Use Condition, the observed interaction pattern between Closeness to Other Facebook Users and Time was significant (beta = 4.20(0.85), $\chi^2(1)$ = 23.03, $p < 0.001$). As can be seen in Figure 3, when Passively using Facebook, there was an increase in Social Connectedness only when Closeness to Other Facebook Users was high. This pattern was not observed when Closeness was low. This interaction between Closeness and Time was not significant in the Control Condition, ($\chi^2(1)$ = 0.53, $p = 0.468$).

3.3. Discussion

Contrary to the trend observed in Experiment 1, overall, we found no support for our hypothesis that there is a difference between passive Facebook use and a non-social website on restoring social connectedness after being ostracized. Interestingly, however, exploratory analyses revealed that feelings of closeness to other Facebook users moderated the effect of Facebook use on perceived social connectedness over time: Passively using
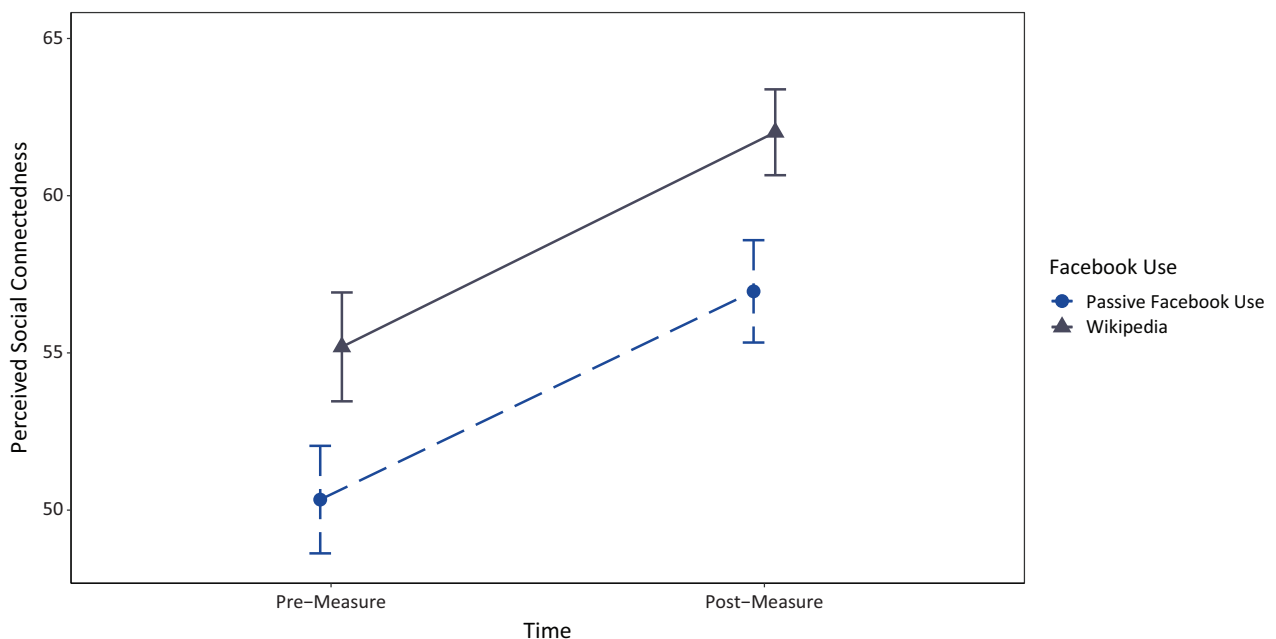

Figure 2. Mean Perceived Social Connectedness per Condition of Facebook Use Over Time for Experiment 2. Note: Standard errors are represented by error bars.
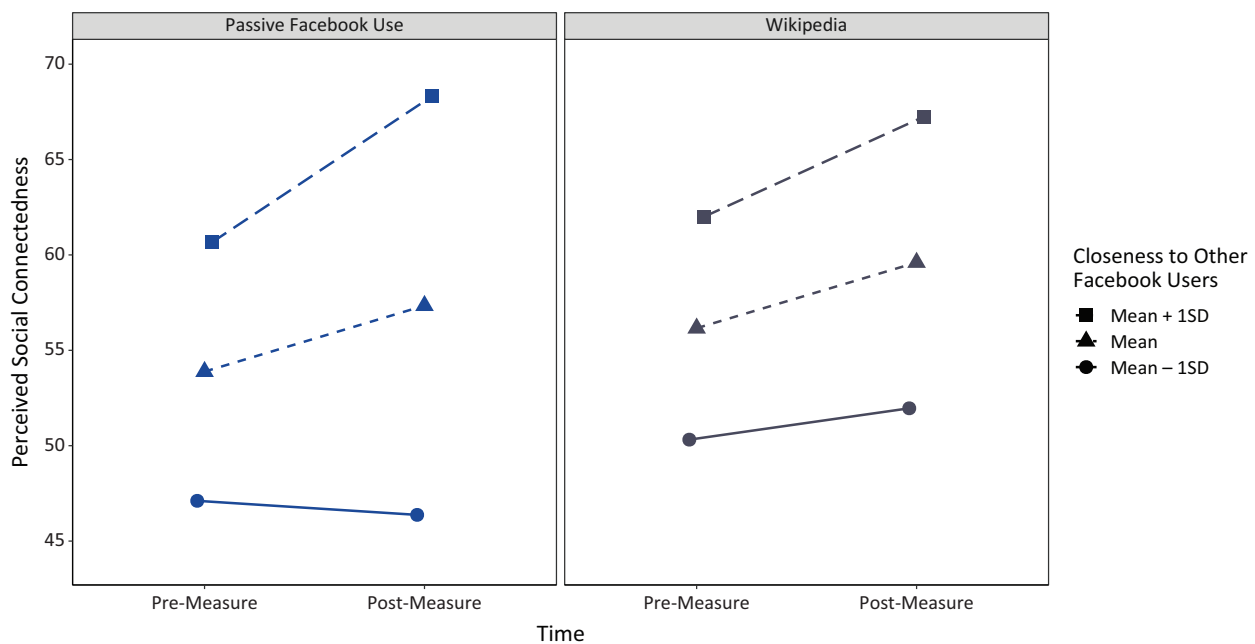
Figure 3. The plotted simple slopes for the three-way interaction effect between Closeness to Other Facebook Users, Facebook Use, and Time on Perceived Social Connectedness. Note: A regression equation was created, and the mean and standard deviation for Closeness to Other Facebook Users were used to predict values of perceived social connectedness at three different levels of Closeness to Other Facebook Users (as recommended by Aiken & West, 1991).

Facebook did positively affect perceived connectedness, but only when the people one encountered on Facebook were close (as compared to non-close) others. This is in line with previous findings that reminders of social bonds can increase perceived social connectedness (Gardner et al., 2005; Knowles et al., 2015).

4. General Discussion

The current research employed two experiments in an ecologically valid online environment to investigate the effect of passive Facebook use on feelings of social connectedness. In Experiment 1, after participants were ostracized, we found a positive effect of active Facebook use on perceived social connectedness, and some indications that passive Facebook use, similarly to active Facebook use, restored perceived social connectedness, whereas using a non-social website did not (although the difference between passive Facebook use and the control did not reach significance). In Experiment 2, we found that participants who used Facebook passively showed an increase in perceived social connectedness after being ostracized; however, this effect was very similar among participants using a non-social website. We did find indication that passive Facebook use may help to reconnect if one feels relatively close to the people one encounters on Facebook.

Experiment 1 showed that active Facebook use can increase feelings of social connectedness, which is in line with previous findings by Frison and Eggermont (2015) and große Deters and Mehl (2013). The present research extends previous findings by indicating that active Facebook use has a more positive impact on social connectedness than the use of a non-social website. Furthermore, we found this to be the case after feelings of belongingness were thwarted by ostracism, suggesting that active Facebook use can restore feelings of connection in an online environment similar to offline environments (e.g., Knowles et al., 2015; Twenge et al., 2007).

Although passive Facebook use did show significant increases in feelings of social connection after ostracism, these effects were overall not stronger than spending time on Wikipedia, our non-social control condition. Although these findings do not refute the possibility that passive Facebook use can promote a sense of belongingness, it appears easier to find positive effects of active Facebook use than any effects of passive Facebook use. In both experiments, however, we found no evidence that passive Facebook use *undermined* feelings of social connectedness, as some previous findings have suggested (e.g., große Deters & Mehl, 2013; Tobin et al., 2015). Thus, the negative effect of passive Facebook use on feelings of connectedness, as found in previous research, might indeed only exist relative to active Facebook use, and not relative to other "non-social" internet behavior.

Exploratory findings in Experiment 2 showed that using Facebook passively can lead to increased feelings of social connectedness after ostracism for those participants who felt closer to the Facebook friends they encountered. This suggests that passive Facebook use may not only lead to feelings of envy and social comparison processes, as suggested previously (Verduyn

et al., 2015, 2017). Instead, our findings are in line with Koroleva et al. (2011), who found that a high-quality network on a social network site is necessary to gain its social benefits. Additionally, these findings are in line with previous research indicating that cues from close others can protect against the detrimental effects of ostracism (Karremans et al., 2011; Knowles et al., 2015), and that social media can provide these cues (Lin et al., 2016). Unfortunately, the current research cannot provide mechanistic insights here, and more experimental work on when and how passive Facebook use may promote social connectedness is required to create a more nuanced picture of this issue.

4.1. Limitations

Some limitations need to be mentioned. First, in the current research, we only investigated the effect of Facebook use after ostracism. Though we believe this is an important addition to the literature on recovering thwarted belonging needs, this design also comes with caveats. Most obviously, it means we cannot confidently generalize our findings to situations without ostracism. Furthermore, our findings suggest that participants naturally recovered back to their baseline social connectedness within the five minutes of Facebook or Wikipedia use, as seen in the increase in social connectedness over time in almost all conditions of both experiments (the only exception being the control condition in Experiment 1). This is in line with previous research on spontaneous recovery of connectedness (e.g., Zadro et al., 2006), and exemplifies the importance of the control condition to investigate the effect of Facebook use on the increase in social connectedness.

Second, we should critically discuss the design of our conditions. For the control condition, we used the main page of Wikipedia as a starting point. We ran a pilot to ensure that this page was seen as non-social, but still similar to Facebook in many other ways (see S2 in the Supplementary File). However, the main page of Wikipedia features different articles every day, which means that some days the content the participants were exposed to might be more social and positive than on other days. Though both Experiments 1 and 2 were conducted over several days, this could partly explain why in Experiment 1 the participants on average did not increase in social connectedness over time, while in Experiment 2 they did. Furthermore, browsing Wikipedia is not likely a normal behavior for most people. Past research has had similar issues (e.g., browsing neutral photos or comics as control conditions; Knowles et al., 2015), indicating that it is quite difficult to find a control condition for Facebook use that is non-social, entertaining, and natural to use.

Our choice of the passive and active Facebook conditions should also be discussed. We chose to include only the "likes," comments, and browsing features of Facebook in our study, neglecting Facebook func-

tions like direct messaging, creating events and inviting others, shopping, and others. More active ways of using Facebook, including creating posts, might lead to more "likes," which in turn leads to higher self-esteem (Marengo et al., 2021), and might additionally lead to more feelings of social connection. Our condition for passive Facebook use, on the other hand, could not have been more passive but could have been longer. Arguably, spending a short time using Facebook passively could have the positive effects discussed, whereas browsing Facebook for a longer time without engaging with any posts could be more likely to lead to negative effects, like upward social comparison (Verduyn et al., 2017).

Additionally, though Facebook is currently the most used social network site in the world, it is certainly not the only one, and other social network sites like Instagram, Snapchat, and Tiktok are more popular than Facebook among people under 30 years old (Auxier & Anderson, 2021). Although social mechanisms may be similar across these different platforms, it is important that future research looks into what specific features of social network sites, and the behavior they enable, can influence social connectedness.

As a final limitation, we did not take participants' personalities into account. In both experiments, we randomly assigned participants to use Facebook actively or passively (or not at all), which is again not an accurate representation of usual Facebook browsing behavior. By doing so we ignored individuals' preferences for passive or active Facebook use. About 6% of the initial participants had to be excluded due to them using Facebook differently from instructed (see S3 and S7 in the Supplementary File), implying they had Facebook habits different from the instructions. We further had to exclude about 21% of all participants because participants were unwilling or unable to share screenshots of their Facebook pages. The advantage of taking these screenshots was that it allowed us to objectively verify whether and how participants had used Facebook, which increased the validity of our measurement. However, the unfortunate side effect may be that our sample excluded participants with certain personality traits leading them to not being comfortable with sharing their Facebook information. Given research that implies that personality type might be predictive of the type of Facebook use (Pagani et al., 2011), future research might further take these differences into account.

5. Conclusion

The current article sheds light on the alleviating effects of using a social network site after ostracism. Corroborating past research, we found that active Facebook use increases social connectedness after ostracism. Findings on whether passive Facebook use can increase feelings of social connectedness remained somewhat ambiguous. In neither of the experiments did we find clear indications that passive Facebook use can increase feelings of

connectedness after ostracism compared to a non-social control condition. However, our results importantly suggest that passive social media use does not seem to harm people in ways previously reported. In exploratory results, we further found that passively using Facebook may be able to increase feelings of social connectedness as long as the Facebook user feels close to the other users on the platform. Despite limitations, the current article helps understand how social media use can influence feelings of connectedness in an increasingly digital world.

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

A supplementary file (referred to in the text as S1–S10), as well as the preregistrations, data, and analysis scripts for both experiments, can be found on the Open Science Framework through this link: https://doi.org/10.17605/OSF.IO/G77B5

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About the Authors

Ilse L. Pit is a doctoral candidate in Evolutionary Anthropology at the Institute of Human Sciences, Oxford University, and the Calleva Research Centre for Evolution and Human Sciences, Magdalen College. She is currently working on her dissertation on the role of social norms in inter-group perception and behavior. She is further interested in how social processes are affected by the internet.

Harm Veling is a professor at Consumption and Healthy Lifestyles, Wageningen University and Research, in the Netherlands. He studies psychological processes in relation to self-control and behavior change. For instance, he has examined how cognitive training can be used as means to improve self-control and facilitate behavior change. Furthermore, he has studied how social media use influences behavior regulation and well-being.

Johan C. Karremans is a professor at the Behavioural Science Institute, Radboud University, in the Netherlands. He studies the determinants and outcomes of well-functioning close relationships. In this work, he has focused on the role of regulation processes like inhibition and mindfulness. In addition, his research interests include the effects of social inclusion and exclusion.