

Threats to belonging on Facebook: lurking and ostracism

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We examined two threats to belonging and related needs on Facebook: lurking (Study 1) and ostracism (Study 2). In Study 1, participants were either allowed or not allowed to share information on Facebook for 48 hours. Those who were not allowed to share information had lower levels of belonging and meaningful existence. In Study 2, participants engaged in a laboratory-based Facebook activity. Half of the profiles were set up so that participants would not receive any feedback on their status updates. Participants who did not receive feedback on their updates had lower levels of belonging, self-esteem, control, and meaningful existence. Together, these findings indicate that a lack of information sharing and feedback can threaten belonging needs.

Keywords: Facebook; social networking sites; belonging; ostracism; meaning

Social networking sites such as Facebook allow people to extend their offline friendships into an online environment (Ross et al., 2009). Relationships are documented on one's profile and a continually updating stream of information from one's friends is available on demand. People are able to share information with others, comment on other people's activities, and send and receive private messages. On the one hand, use of a social networking site could make it easier than ever to satisfy the need to belong (Baumeister & Leary, 1995), either with passive reminders of one's connections (Gardner, Pickett, & Knowles, 2005) or with actual interaction. On the other hand, use of a social networking site also increases opportunities for social rejection, which can threaten belonging. Although cyberbullying is a known problem (Wingate, Minney, & Guadagno, 2013), milder forms of rejection such as feeling left out or ignored by others on social networking sites have received less attention. In this research, we examined two potential threats to belonging: lurking (i.e., lack of active contribution) and ostracism (i.e., lack of feedback from others). We focused on Facebook, in particular, as it is the most widely used social networking site in the world with 1.11 billion monthly active users (Facebook, 2013).

Perhaps not surprisingly, there is mixed evidence for the benefits of Facebook. Some studies have found that greater use of Facebook predicts negative outcomes such as greater negative affect and less satisfaction with life (Kross et al., 2013), whereas others have found that greater use of Facebook is associated with positive outcomes such as greater social capital (Ellison, Steinfield, & Lampe, 2007) and connection (Sheldon, Abad, & Hinsch, 2011), and lower social loneliness (Ryan & Xenos, 2011). A closer look at the literature reveals that the specific activities in which Facebook users engage determine whether they experience predominantly positive or negative outcomes.

For instance, Ryan and Xenos (2011) found that stronger preferences for active social contribution features (i.e., status, wall, comments, news feed, like, messages, photos) and

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news and information (i.e., events, notes) were associated with lower levels of social loneliness. Conversely, stronger preferences for passive engagement (i.e., groups, games, fan pages) were associated with higher levels of social loneliness. Similarly, Burke (2011) found that higher levels of directed communication (i.e., interactions between specific Facebook users) uniquely predicted increases in social support and bridging social capital, and decreases in loneliness over time, whereas higher levels of passive consumption (i.e., monitoring content aimed at a broad audience) predicted decreases in bridging social capital. Further inspection of directed communication revealed that it was receiving composed text rather than one-click actions such as a “like” that predicted increases in social support and bridging social capital, and decreases in loneliness.

More recently, Deters and Mehl (2013) found that participants who had been randomly assigned to post more status updates than usual for a 7-day period experienced increases in daily sense of connectedness and decreases in loneliness. Interestingly, when they examined whether feedback on participants’ status updates (i.e., the proportion of updates that received a comment and/or a like) was associated with changes in loneliness, they found no significant effects. However, it is possible that this measure of feedback was not sensitive enough (e.g., the researchers were not able to access private messages), not well-aligned with participants’ subjective evaluation of the response, or that participants were able to compensate for the lack of feedback. Consistent with the idea that feedback matters, Karlen and Daniels (2011) found that *imagining* oneself being involved in negative interactions on Facebook resulted in lower levels of belonging, self-esteem, control, and meaningful existence.

In sum, past research establishes a positive association between active Facebook use and belonging. However, everyday threats to belonging in the form of lurking and ostracism remain underexplored. To address these unanswered questions, we conducted two experiments. In Study 1, we examined the role of lurking (i.e., lack of active contribution) on social networking sites in meeting belonging and related needs. Lurkers have been defined in previous research as those who visit an online community or social networking site on at least an occasional basis, but who post rarely or not at all (McKenna & Bargh, 1998; Rau, Gao, & Ding, 2008). Lurkers have lower levels of intimacy in their online social networks (Rau et al., 2008), which could influence perceived belonging. Accordingly, it is desirable to manipulate rather than simply measure lurking behavior in order to examine its causal impact on belonging. In Study 1, we recruited non-lurkers and turned half of them into lurkers for a short time by giving all participants permission to access Facebook, but asking half of them not to post any content for the next two days. In Study 2, we examined the role of ostracism (i.e., lack of feedback from others) on social networking sites in meeting belonging and related needs. We asked all participants to post a status update on Facebook, but restricted half of them from receiving any feedback. We predicted that need satisfaction would be reduced when participants refrained from active contribution (Study 1) and did not receive any feedback from others (Study 2).

Study 1

In Study 1, we recruited a convenience sample of Facebook users who posted frequently. After assessing baseline need satisfaction, we randomly assigned our participants to one of two conditions: post-as-usual or do-not-post. All participants were allowed to log into Facebook and read information, but only those in the post-as-usual condition were allowed to make any public posts (i.e., post content or respond to other people’s posts). After

48 hours, participants completed the need satisfaction measures again. We predicted that participants in the do-not-post condition would have lower levels of belongingness than those in the post-as-usual condition.

We also examined self-esteem, control, and meaningful existence as additional dependent variables. These needs are routinely examined in the ostracism literature because people are thought to consider negative aspects of the self that may be to blame when others ignore them, experience a lack of control when their efforts to participate go unnoticed, and feel invisible, meaningless, and unimportant when others fail to acknowledge their existence (Williams, 2009). Although ostracism is usually found to threaten all needs, in some cases (e.g., computer-mediated ostracism) it has only a weak effect on self-esteem and control (Williams et al., 2002; Study 4). When individuals do not initiate any public communication, they are not putting themselves on the line or trying to elicit feedback, so we would not expect them to experience much threat to self-esteem or control. However, we thought that not posting might make people feel less visible and thus decrease their sense of meaningful existence.

Method

Participants

We used a snowball sampling method to recruit a convenience sample of social networking site users who posted frequently. The researchers posted a description of the study on their Facebook, Twitter, and Google +¹ profiles and encouraged people to share the description. The study was also advertised on the Social Psychology Network's website and Twitter feed. The description stated that to be eligible for the study, participants should be a regular participant (post at least once a week) on Facebook, Twitter, and/or Google +. The incentive for participating was entry into a drawing for one iPad 2 or one of eight AU\$25 gift certificates from Amazon.com or iTunes. An examination of the names provided for the drawing at the end of part 2 revealed that only 19% of the participants were directly connected to the researchers via social networking sites, indicating that the recruiting method had indeed reached beyond immediate contacts. Furthermore, the researchers had not discussed the study's hypotheses with any participants.

One hundred and ninety-two individuals began part 1, but 40 people discontinued at some point during part 1, either before ($n = 33$) or after ($n = 7$) the manipulation, and 39 people completed part 1 but either did not respond to part 2 or did not provide a code that matched their part 1 code. There were no significant differences as a function of condition in dropout rates after the manipulation, $\chi^2(1, N = 159) = 1.82, p = .177$. An additional 12 participants completed part 2 more than 4 days after they responded to part 1. Because the wording of our manipulation and measures was designed for a 2-day interval, we excluded their data. Thus, only 101 individuals completed parts 1 and 2 of the study within an acceptable time frame (no more than 4 days between parts 1 and 2).

The data from an additional 12 participants were excluded: 6 participants did not select Facebook when asked to indicate which social networking sites they posted or commented on in a typical week, and 6 participants did not complete several of the measures. For the remaining 89 participants (73% female, 27% male), the average age was 30.67 years ($SD = 11.00$). Most of the participants resided in Australia (52%), the USA (34%), or the UK (6%). The majority of the sample (92%) had at least some university/college education.

Procedure

The first online questionnaire assessed demographic variables and baseline need satisfaction. Participants were asked to create a personal but non-identifying code that could be used to link their responses from Times 1 and 2. At the end of the questionnaire, participants were randomly assigned to one of two conditions: post-as-usual or do-not-post. In the post-as-usual condition, we asked participants to continue to use social networking sites as they normally would for the next 48 hours, logging on when they normally would, reading what others post as they normally would, and sharing information as they normally would. In contrast, in the do-not-post condition, we asked participants to change how often they share information on social networking sites for the next 48 hours. Specifically, we told them they could log on as they normally would and read what others post as they normally would, but asked them not to share any information publicly (i.e., not to post any updates, links, or photos, or comment on, like, +1, or retweet something another person posted).

We assessed whether participants understood the posting instructions by using a comprehension check and repeated the posting instructions if necessary. Participants were reminded that participation in the study was completely voluntary and they were free to withdraw from the study at any time without prejudice or penalty. They were asked to enter their email address on a separate screen so that we could contact them with the link for the second online questionnaire.

The second online questionnaire assessed need satisfaction and Facebook use over the past 2 days, and for those who posted information, satisfaction with the response they received. At the end of the second questionnaire, participants were debriefed and given the opportunity to enter their name and email address into the drawing for the prizes. Identifying details were not linked with their responses at either time point.

Measures

We used Gonsalkorale and Williams' (2007) measure of perceived belonging [e.g., "I felt disconnected" (reversed)], self-esteem (e.g., "I felt good about myself"), control (e.g., "I felt powerful"), and meaningful existence [e.g., "I felt meaningless" (reversed)]. We modified one item that referred to an interaction ("I felt I had control over the course of the interaction") so that it better fits the context of our study ("I felt I had control"). In the first questionnaire, we used present tense for all of the items and asked participants to indicate to what extent they generally feel this way (1, *not at all*; 5, *very much*). In the second questionnaire, we used past tense for all of the items and asked participants to indicate on the same scale to what extent they felt this way over the past 2 days. Cronbach's α 's were high at Times 1 and 2 for belonging (.85, .81), self-esteem (.85, .81), and meaningful existence (.83, .89), and relatively weak for control (.52, .58).

In the second questionnaire, we asked participants to report on their activity on social networking websites since they completed the first survey. We first asked them to indicate which websites they used: Facebook, Twitter, Google + , personal blog. If they reported using Facebook since the first questionnaire, we also asked them how many times since they completed the first survey they had posted a status update, re-posted something someone else had posted, posted photos, commented on other people's posts, and read other posts or just checked Facebook. If they indicated they had made a status update on Facebook, we asked how satisfied they were with the responses they received to their posts (1, *extremely unsatisfied*; 5, *extremely satisfied*).

Table 1. Frequency of Facebook activities during the experimental period in Study 1.

Activity	Do-not-post <i>M</i> (<i>SD</i>)	Post-as-usual <i>M</i> (<i>SD</i>)	<i>t</i>	df	<i>p</i>	Cohen's <i>d</i>
Status updates	0.17 (0.46)	2.40 (3.68)	-4.15	49	<.001	0.85
Re-posts	0.03 (0.19)	0.77 (1.26)	-3.93	49	<.001	0.82
Photo posts	0.16 (0.45)	1.02 (2.49)	-2.31	51	.025	0.48
Comments on other people's posts	0.71 (1.30)	6.02 (7.02)	-5.11	52	<.001	1.05
Read other posts or just checked Facebook	12.33 (8.57)	14.31 (9.72)	-0.94	79	.35	0.22

Notes: The degrees of freedom differ due to corrections for unequal variances. There were four outliers on these variables, but there was no substantive difference when they were excluded.

Results

Manipulation checks

When we examined whether or not participants had used Facebook between the two questionnaires, we found that those in the do-not-post condition were somewhat less likely to have used Facebook (85%) compared with those in the post-as-usual condition (96%), $\chi^2(1, N = 89) = 3.47, p = .06$.

An examination of specific behaviors among participants who had used Facebook revealed that, as intended, those in the do-not-post compared with those in the post-as-usual condition made significantly fewer status updates, re-posts, photo posts, and comments on other people's posts (see Table 1). However, participants in the do-not-post and post-as-usual conditions read other posts or just checked Facebook a similar number of times.

Need fulfillment

Because we had baseline levels of need fulfillment from Time 1, we controlled for the appropriate need when examining Time 2 need fulfillment and examined whether baseline need fulfillment interacted with our posting manipulation. Specifically, in separate regressions, we regressed Time 2 need fulfillment on centered Time 1 need fulfillment, effects-coded posting condition (-1, do-not-post; +1, post-as-usual), and the Time 1 need fulfillment \times posting condition interaction.

The regression analyses revealed significant main effects of Time 1 need fulfillment on Time 2 need fulfillment, but no interactions between Time 1 need fulfillment and posting condition. In addition, there were significant main effects of posting condition on Time 2 sense of belonging and meaningful existence (see Table 2). As predicted, belonging and meaningful existence were lower in the do-not-post condition than in the post-as-usual condition. Mean need fulfillment as a function of posting condition is displayed in Table 3.

We also obtained significant main effects of posting condition on belonging, $\beta = .30, t(77) = 3.67, p < .001$, and meaningful existence, $\beta = .17, t(77) = 2.12, p = .037$, when we excluded the two post-as-usual and six do-not-post participants who did not access Facebook between Times 1 and 2.

Need fulfillment and satisfaction with responses in the post-as-usual condition

Lastly, for those in the post-as-usual condition who made a least one status update ($n = 34$), we examined whether Time 2 need fulfillment varied as a function of participants' satisfaction with the response to their posts during the 2-day experimental

Table 2. Standardized effects of posting condition and Time 1 need fulfillment on Time 2 need fulfillment in Study 1.

	Belonging	Self-esteem	Control	Meaningful existence
Time 1 need fulfillment	.58***	.61***	.49***	.64***
Posting condition	.30***	.10	.01	.17*
Time 1 need fulfillment \times posting condition	.04	-.02	-.04	-.06

Note. Posting condition was coded as -1, do-not-post; +1, post-as-usual.

*** $p < .001$. * $p < .05$.

Table 3. Mean need fulfillment by feedback condition in Study 1.

Measure	Time 1		Time 2		Time 2 adjusted for Time 1	
	Do-not-post <i>M</i> (SD)	Post-as-usual <i>M</i> (SD)	Do-not-post <i>M</i> (SD)	Post-as-usual <i>M</i> (SD)	Do-not-post <i>M</i> (SE)	Post-as-usual <i>M</i> (SE)
Belonging	3.35 (1.25)	3.77 (1.09)	3.22 (1.13)	4.13 (0.99)	3.35 (0.14)	4.03 (0.12)
Self-esteem	3.38 (1.05)	3.75 (0.88)	3.43 (0.94)	3.81 (0.84)	3.55 (0.11)	3.72 (0.10)
Control	2.99 (0.80)	3.12 (0.60)	2.93 (0.77)	3.01 (0.71)	2.97 (0.10)	2.98 (0.09)
Meaningful existence	3.82 (1.17)	4.17 (0.90)	3.74 (1.19)	4.33 (0.88)	3.87 (0.13)	4.23 (0.11)

Note: The adjusted means in the last two columns were taken from a series of ANCOVAs, each of which included the baseline (i.e., Time 1) specific need fulfillment score as a covariate.

period. Indeed, it did. Lower satisfaction with responses was associated with lower levels of Time 2 belonging, $r = .37$, $p = .029$, and self-esteem, $r = .38$, $p = .028$. In contrast, Time 1 need fulfillment was not significantly associated with satisfaction with responses during the 2-day experimental period, $ps > .11$.

Discussion

As predicted, Study 1 revealed that not posting on Facebook for approximately 2 days had a negative impact on need fulfillment. Specifically, controlling for baseline levels of need fulfillment, participants in the do-not-post condition reported lower levels of belonging and meaningful existence at Time 2 than did those in the post-as-usual condition. This effect was not due to total Facebook abstinence (Sheldon et al., 2011), as the effect of posting condition was still significant when the eight people who stayed off Facebook altogether between Times 1 and 2 were excluded from the analyses. In addition, among those who logged into Facebook, posting condition affected the number of status updates, re-posts, photo posts, and comments, but had no effect on reading posts or just checking Facebook.

These findings show that Facebook users experience lower need fulfillment when they refrain from sharing information. This is consistent with other research which found that passive consumption of information on Facebook did not meet belonging needs the way that active use and directed communication did (Burke, 2011; Ryan & Xenos, 2011). However, by controlling the extent to which people shared information, our study offers more compelling evidence that refraining from sharing lowers belonging, rather than some variable related to a natural tendency to refrain from sharing.

Our findings complement those of Deters and Mehl (2013), who observed decreases in loneliness among participants who were asked to make more status updates than usual on Facebook. These researchers noted that they had originally included a condition similar to our do-not-post condition, but had dropped it because the baseline level of posting across conditions was quite low. Specifically, about a third of their participants posted no status updates during the 2-month baseline period, and thus, would not have been able to post any fewer status updates during the 7-day experimental period. Our approach of recruiting participants who were regular contributors (i.e., posted at least once a week) on Facebook helped to offset this potential problem.

To our knowledge, our study is the first to examine meaningful existence as an outcome of Facebook use. Research on ostracism shows that our sense of social inclusion can affect related needs such as meaningful existence (Williams, 2009). Furthermore, the public nature of content posted on Facebook should help to foster a sense of visibility and importance. Consistent with these ideas, we found that not sharing information on Facebook reduced participants' sense of meaningful existence.

We found no significant effects of posting condition on self-esteem or control. This could be because not posting provides an obvious explanation for any perceived lack of engagement by others. However, the low reliability of our control measure may have also been a contributing factor. Although the scale had good reliability in past research (e.g., Gonsalkorale & Williams, 2007, reported an α of .73), in our studies the α was $< .60$. Although dropping an item helped somewhat for the Time 1 measure, dropping any item at Time 2 lowered the reliability even further. Thus, in Study 2, we used a measure that contained more items.

In sum, Study 1 established that logging in but not sharing information on Facebook, relative to sharing as usual, decreased participants' sense of belonging and meaningful existence. We also found that among those who shared as usual, less satisfaction with responses to their posts during the 2-day experimental period was associated with lower belonging and self-esteem at Time 2. This is consistent with our assertion that lack of participation and lack of feedback can threaten belonging needs. However, the correlational nature of the satisfaction data limits our ability to draw causal conclusions. It is possible that instead of feedback affecting need fulfillment, current need fulfillment affects perceptions of recent feedback. To test whether feedback on status updates exerts a causal influence on one's sense of belonging and related needs, we conducted a laboratory experiment.

Study 2

To control the responses participants received on Facebook, in Study 2 participants came into the laboratory to make a status update on a Facebook account that had been set up by the researchers. This allowed us to manipulate the settings so that only half of the participants would receive a response to their status update. We then assessed participants' sense of belonging, self-esteem, control, and meaningful existence. Based on the ostracism literature (Williams, 2009) and Burke's (2011) study, we predicted that participants would experience greater need fulfillment when they received feedback than no feedback on their post.

Method

Participants

Participants were 79 undergraduate psychology students from the University of Queensland. Participants were randomly assigned to either the feedback or no feedback condition. Participants received course credit for their participation in the study. The data

from three participants were excluded: one participant completed only half of the study due to no other participants arriving for this session and the other two participants were each outliers (>3 SD from the mean) on one of the outcome or predictor variables. The remaining sample of 76 participants consisted of 64.5% female and 35.5% male participants.

Procedure

Participants came to a computer laboratory in groups of 3–7, including one confederate, who was also a university student. Each participant was seated at his or her own computer. The computers were separated by dividers so that participants could not see each other when they were seated at the computer. Participants engaged in a Facebook activity using accounts that had been created by the researchers. These accounts were set up to be friends with each other, but the no feedback accounts had restricted all of the other accounts. This meant that when participants posted something from one of the no feedback accounts, none of the other participants could see their posts. The Facebook accounts were identical except for the restriction settings and the first names, which were all gender-neutral names.

For the Facebook activity, participants were instructed to select a profile picture from an album of photos that were the same for each participant. Pictures included depictions of nature, sport, television shows and movies, animals, iconic buildings, food, and vehicles. Next, they were asked to write a status update about something interesting that had happened to them in the last week. They were told that we wanted participants to interact with one another, so to view and comment on some of the statuses of other participants in the room. They were asked only to comment on each status once and not to comment on their own status. This was to minimize the amount of interaction in order to achieve more control.

A confederate was present in the room to ensure that all participants who were in the feedback condition received at least one comment on their status. Participants were given 7 min on Facebook before being instructed to close the Facebook window and complete some questionnaires, which included a measure of need fulfillment as well as manipulation checks. Once participants had completed all of the measures they were given a debriefing sheet that let them know that the settings in some of the accounts had been changed so that some of the statuses were invisible to everyone else. The sheet specifically stated that anyone who received no comments was only ignored because no one could see their status and not because others in the room were choosing to ignore them. This was done to ensure that participants would not leave the room adversely affected by the ostracism they may have experienced. At the end of each session the activity from that session was removed from each of the Facebook accounts such that each new group of participants would be using blank accounts.

Measures

We used the Need Satisfaction Following Ostracism scale (Jamieson, Harkins, & Williams, 2010), which asks participants to report the extent to which they experienced belonging (e.g., “I felt that I belonged to a group”), self-esteem (e.g., “I felt good about myself”), meaningful existence (e.g., “I felt important”) and control (e.g., “I felt powerful”) during a particular task. Participants were instructed to indicate how they felt during the Facebook activity (1, *not at all* to 5, *extremely*). We modified the scale to fit our study by dropping one of the control items (e.g., “I felt the other players decided everything”) and rewording another item (e.g., “I felt I had control over responses to my posts”). Subsequent analysis

revealed that one of the other control items (“I felt I am unable to influence the action of others”) lowered the reliability of the scale ($\alpha = .58$) and was subsequently dropped. Items in each subscale were averaged together (α 's = .73–.85).

To check the effectiveness of our manipulation, we asked participants to indicate the extent to which other people seemed interested in their post (1, *not at all* to 7, *to a great extent*) and how included they felt in the group (1, *very excluded* to 5, *very included*).

Results

As intended, *t*-tests revealed that participants in the no feedback condition thought other people seemed significantly less interested in their post and felt less included in the group than did those in the feedback condition. In addition, across all needs, need fulfillment was significantly lower in the no feedback condition than in the feedback condition (see Table 4).

Discussion

Study 2 revealed that receiving feedback on status updates affects need fulfillment. Participants in the no feedback condition reported lower levels of belonging, self-esteem, control, and meaningful existence during the Facebook activity than did those in the feedback condition.² These findings are consistent with findings in the broader ostracism literature, which have found that being ignored in person and online (e.g., in a game of cyberball or in a chat room) can threaten belonging and related needs (Williams, 2009; Williams et al., 2002).

It was necessary to use researcher profiles to control the amount of feedback participants received in Study 2. This meant that the feedback or lack of feedback came from strangers who were presumably able to see their status update. When people post status updates from their personal profiles, it may be less clear whether friends have seen their updates, introducing a more benign explanation for a lack of feedback. However, after sufficient time has passed, people would likely feel worse if actual friends (vs. strangers) failed to acknowledge their status update.

General discussion

Across two experiments, we examined the effects of Facebook lurking (Study 1) and ostracism (Study 2) on belonging and related needs. In Study 1, we found that people who were not allowed to share information on Facebook experienced lower levels of belonging and meaningful existence than did those who were allowed to share information.³ In addition, among those who were allowed to share information, those who were less

Table 4. Effects of feedback condition on the manipulation check items and need fulfillment in Study 2.

Measure	No feedback <i>M</i> (SD)	Feedback <i>M</i> (SD)	<i>t</i>	df	<i>p</i>	Cohen's <i>d</i>
Perceived interest	1.70 (1.22)	5.10 (1.39)	− 11.29	74	< .001	2.60
Sense of inclusion	2.46 (1.19)	3.90 (0.82)	− 6.09	63	< .001	1.41
Belonging	3.19 (0.78)	4.05 (0.84)	− 4.61	74	< .001	1.06
Self-esteem	3.14 (0.77)	3.68 (0.84)	− 2.93	74	.005	0.67
Control	2.19 (0.82)	3.02 (0.86)	− 4.31	74	< .001	0.99
Meaningful existence	3.23 (0.84)	3.77 (0.78)	− 2.96	74	.004	0.67

Note: The degrees of freedom differ due to correction for unequal variances.

satisfied with the response they received from others reported lower belonging and self-esteem. We conducted Study 2 to test the causal role of feedback on belonging and related needs. Indeed, we found that people who did not receive a response to a status update experienced lower levels of belonging, self-esteem, control, and meaningful existence than did those who received a response.

Together, these findings illustrate that belonging needs are threatened on Facebook when users refrain from generating content and do not receive a response from others. The experimental design of Studies 1 and 2 allowed us to draw stronger causal conclusions than previous researchers, who found correlations between active Facebook use and belonging (Ryan & Xenos, 2011) and between directed communication and increases in belonging (Burke, 2011). The findings also go beyond existing research on vicarious rejection on Facebook (Karlen & Daniels, 2011) by examining actual rather than imagined rejection and showing that simply being ignored is sufficient to threaten one's needs. This is consistent with other research on social and cyberostracism (Williams, 2009; Williams et al., 2002).

Our findings build on Deters and Mehl's (2013) findings by showing that feedback from others does affect belonging. The subjective measure we used in Study 1 may have been more sensitive than the objective counts they used. Similar to research on loneliness which finds that subjective isolation predicts outcomes above and beyond objective isolation (Cacioppo & Hawkley, 2009), subjective satisfaction with feedback is probably the best predictor of belonging. In addition, assessing people's reactions in the moment, as we did in Study 2, may have increased our ability to detect the effect of feedback on need satisfaction. It is possible that people have ways of coping with a lack of feedback on Facebook which help them restore their sense of belonging.

Our findings are consistent with Baumeister and Leary's (1995) argument that people have a fundamental need to belong that can be satisfied by frequent positive interactions with others in the context of ongoing relationships. Although other researchers have found that viewing reminders of social connections (Gardner et al., 2005) and thinking about social surrogates (Derrick, Gabriel, & Hugenberg, 2009) can meet belonging needs to some extent, our findings indicate that a lack of communication on the part of individuals or their audience can threaten belonging needs. Our findings are conceptually similar to past research examining people who choose to lurk. McKenna and Bargh (1998) found that people with marginalized sexual identities who read information that other people posted on relevant newsgroups, but did not post any content themselves, experienced more social isolation than did those who posted information. In addition, Rau et al. (2008) found that social networking site lurkers perceived less intimacy in their social networks. These researchers viewed lack of intimacy as a predictor of lurking behavior, although our findings suggest that lurking behavior could further undermine intimacy.

Social networking sites such as Facebook give people on demand access to reminders of their social relationships and allow them to communicate with others whenever they desire. Our findings suggest that it is communication, rather than simple use, that is key in producing a sense of belonging. When sharing or feedback is restricted, belonging suffers.

Notes

1. Originally, we had planned to look at activities across the different social networking sites, but because Facebook was by far the most commonly used site, we focused on activities there.
2. We assessed general belonging (Malone, Pillow, & Osman, 2012), rejection sensitivity (Downey & Feldman, 1996), and others' approval contingency of self worth (Crocker, Luhtanen, Cooper, & Bouvrette, 2003) as potential moderators. However, the effects of feedback condition on need satisfaction did not depend upon any of these variables (interaction

$ps > .10$). Thus, consistent with the findings in the ostracism literature, immediate responses to being ignored by others were negative and were not moderated by potentially relevant individual difference variables (Williams, 2009).

3. One problem with the lurking manipulation in Study 1 is that lack of choice, rather than lack of posting, might have threatened needs. However, it is unclear why a lack of choice would affect measures of belonging and meaningful existence, but not control or self-esteem.

References

- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497–529. doi:10.1037/0033-2909.117.3.497.
- Burke, M. (2011). *Reading, writing, relationships: The impact of social network sites on relationships and well-being* (Unpublished doctoral dissertation). Carnegie Mellon University, Pittsburgh, PA.
- Cacioppo, J. T., & Hawkley, L. C. (2009). Perceived social isolation and cognition. *Trends in Cognitive Sciences*, 13, 447–454. doi:10.1016/j.tics.2009.06.005.
- Crocker, J., Luhtanen, R. K., Cooper, M. L., & Bouvrette, A. (2003). Contingencies of self-worth in college students: Theory and measurement. *Journal of Personality and Social Psychology*, 85, 894–908. doi:10.1037/0022-3514.85.5.894.
- Derrick, J. L., Gabriel, S., & Hugenberg, K. (2009). Social surrogacy: How favored television programs provide the experience of belonging. *Journal of Experimental Social Psychology*, 45, 352–362. doi:10.1016/j.jesp.2008.12.003.
- Deters, F. G., & Mehl, M. R. (2013). Does posting Facebook status updates increase or decrease loneliness? An online social networking experiment. *Social Psychological and Personality Science*, 4, 579–586. doi:10.1177/1948550612469233.
- Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, 70, 1327–1343. doi:10.1037/0022-3514.70.6.1327.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “friends”: social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication*, 12, 1143–1168. doi:10.1111/j.1083-6101.2007.00367.x.
- Facebook. (2013). *Key facts*. Palo Alto, CA: Facebook. Retrieved May 29, 2013, from <http://newsroom.fb.com/Key-Facts>
- Gardner, W. L., Pickett, C. L., & Knowles, M. (2005). Social snacking and shielding: Using social symbols, selves, and surrogates in the service of belonging needs. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 227–241). New York, NY: Psychology Press.
- Gonsalkorale, K., & Williams, K. D. (2007). The KKK won’t let me play: Ostracism even by a despised outgroup hurts. *European Journal of Social Psychology*, 37, 1176–1186. doi:10.1002/ejsp.392.
- Jamieson, J. P., Harkins, S. G., & Williams, K. D. (2010). Need threat can motivate performance after ostracism. *Personality and Social Psychology Bulletin*, 36, 690–702. doi:10.1177/0146167209358882.
- Karlen, C. E., & Daniels, J. R. (2011). *Cyberostracism and social monitoring: Social anxiety’s effects on reactions to exclusion and inclusion online* (Unpublished manuscript). http://digitalcommons.iwu.edu/psych_honproj/147
- Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., . . . , Ybarra, O. (2013). Facebook use predicts declines in subject well-being in young adults. *PLOS ONE*, 8, e69841. doi:10.1371/journal.pone.0069841.
- Malone, G. P., Pillow, D. R., & Osman, A. (2012). The General Belongingness Scale (GBS): Assessing achieved belongingness. *Personality and Individual Differences*, 52, 311–316. doi:10.1016/j.paid.2011.10.027.
- McKenna, K. Y. A., & Bargh, J. A. (1998). Coming out in the age of the internet: Identity “demarginalization” through virtual group participation. *Journal of Personality and Social Psychology*, 75, 681–694. doi:10.1037/0022-3514.75.3.681.

- Rau, P.-L. P., Gao, Q., & Ding, Y. (2008). Relationship between the level of intimacy and lurking in online social network services. *Computers in Human Behavior*, 24, 2757–2770. doi:10.1016/j.chb.2008.04.001.
- Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior*, 25, 578–586. doi:10.1016/j.chb.2008.12.024.
- 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 Behaviour*, 27, 1658–1664. doi:10.1016/j.chb.2011.02.004.
- Sheldon, K. M., Abad, N., & Hinsch, C. (2011). A two-process view of Facebook use and relatedness need-satisfaction: Disconnection drives use, and connection rewards it. *Journal of Personality and Social Psychology*, 100, 766–775. doi:10.1037/a0022407.
- Williams, K. D. (2009). Ostracism: A temporal need-threat model. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 275–314). New York, NY: Academic Press. doi:10.1016/S0065-2601(08)00406-1.
- Williams, K. D., Govan, C. L., Croker, V., Tynan, D., Cruickshank, M., & Lam, A. (2002). Investigations into differences between social- and cyberostracism. *Group Dynamics: Theory, Research, and Practice*, 6, 65–77. doi:10.1037/1089-2699.6.1.65.
- Wingate, V. S., Minney, J. A., & Guadagno, R. E. (2013). Sticks and stones may break your bones, but words will always hurt you: A review of cyberbullying. *Social Influence*, 8, 87–106. doi:10.1080/15534510.2012.730491.