

“Creeping” or just information seeking? Gender differences in partner monitoring in response to jealousy on Facebook

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Abstract

New media, such as Facebook, has implications for romantic relationships, including easing the ability to monitor a partner’s activities. Across two studies we demonstrate that in response to feelings of jealousy, women are more likely than men to monitor their partner’s activities on Facebook. In Study 1, participants were exposed to one of three experimental conditions meant to provoke jealousy, and their search time on a simulated Facebook environment was recorded. Jealousy predicted more time searching for women, but less for men. In Study 2, a dyadic daily experience study, on days when women (but not men) reported greater jealousy they spent more time monitoring their partner on Facebook, and anxious attachment was one mechanism that explained this association. The results are discussed in terms of gender differences in attachment and response to feelings of jealousy.

[T]he ear of jealousy heareth all things.
—The Bible (Apocrypha), Wisdom of
Solomon 1:10

New media, such as Facebook, provide increased access to information, and this has implications for romantic relationships. Although greater access to information about a romantic partner can be both helpful and important, seeing such details about one’s

dating partner may also have negative implications for the experience of jealousy. As our initial quote denotes, jealousy may lead an individual to be particularly attentive to relationship-relevant information. The advent of new social media, such as Facebook, provides a previously unavailable means of access to romantic partners’ daily activities and interactions with other people. Past research suggests that accessing relationship-relevant information on Facebook can contribute to feelings of jealousy for individuals in dating relationships and that Facebook facilitates partner monitoring in response to these feelings (Muise, Christofides, & Desmarais, 2009).

Social media are becoming an increasingly important part of people’s daily lives, and on Facebook alone, more than 1 billion users connect with an average of 130 other people and share on average 90 pieces of information per month (Facebook, 2012). In addition to providing access to all of this information, the medium enables people to monitor others’ activities, including those of their romantic partners, virtually undetected. Indeed, this

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behavior is so common that several terms, including *creeping* and *facestalking*, have been coined in popular discourse. Although these terms have a negative connotation, Utz and Beukeboom (2011) suggest that Facebook may offer a more socially acceptable way of monitoring a partner's activities since the information is posted publicly and accessing it is not an obvious violation of trust.

Findings from more traditional settings suggest that in response to feelings of jealousy, women may engage in more partner surveillance than men (Guerrero, Eloy, Jørgensen, & Anderson, 1993). The current research explores whether "the ear of jealousy heareth all things" by examining jealousy as an antecedent to partner monitoring on Facebook. Because of the ease of monitoring a partner on Facebook, it provides an excellent environment for exploring the nature of gender differences in jealousy and partner monitoring. As a result, we set out to test the prediction that feelings of jealousy lead to "creeping" a partner on Facebook, and that women are particularly likely to engage in partner monitoring in response to jealousy. We also sought to understand the reasons for any potential differences and tested anxious attachment as a possible mechanism.

Jealousy, gender, and behavioral responses

Jealousy is broadly defined as the response to a real or imagined threat to a valued relationship (Bringle & Boebinger, 1990; Pines, 1998). Many studies indicate that men are more likely to experience jealousy in response to sexual infidelity, and women in response to emotional infidelity (e.g., Buss, Larsen, Westen, & Semmelroth, 1992; Levy & Kelly, 2010). Although these studies have been strongly criticized because they are based on hypothetical forced-choice scenarios (e.g., DeSteno, 2010; DeSteno, Bartlett, Braverman, & Salovey, 2002), in a meta-analysis of 40 studies, Sagarin and colleagues (2012) demonstrated that gender differences in responses to jealousy are not merely an artifact of forced-choice response paradigms and are not limited to hypothetical

situations; expected gender differences emerge in response to actual infidelity.

In addition, research indicates gender differences in the behaviors people engage in when feeling jealous. Aylor and Dainton (2001) found that while men reported experiencing more jealousy than women, women were more likely to communicate their jealousy. Similarly, Carson and Cupach (2000) found that, compared to men, women use more integrative communication (e.g., disclosure of feelings, asking for explanations, confronting the partner), whereas men have been shown to avoid discussing issues that may lead to relationship conflict. In one study, independent observers rated men as more likely than women to avoid the critical issue in a conflict resolution interaction between spouses (Simpson, Orina, & Ickes, 2003).

One response to feelings of jealousy that is of particular interest to the current research is partner monitoring. Guerrero and Afifi (1999) found that more intense and frequent experiences of jealousy predicted more partner surveillance (e.g., snooping or keeping close tabs on a partner). One study found that women are more likely than men to experience behavioral jealousy (Guerrero et al., 1993), a response that includes actions such as spying, checking up on a partner, or looking through a partner's things for evidence of a betrayal (Pfeifer & Wong, 1989). However, other researchers have found that people only engage in intrusive behavior if they lack trust in their partner (Vinkers, Finkenauer, & Hawk, 2011). Given the ease of partner monitoring on social media environments such as Facebook, we use this medium to better understand this behavior.

Jealousy and partner monitoring on Facebook

Although Facebook can help people connect with new romantic partners and maintain existing romantic relationships through status updates and the posting of dyadic photographs (Papp, Danielewicz, & Cayemberg, 2012; Saslow, Muise, Impett, & Dubin, 2013; Tokunaga, 2011), Facebook has also been associated with negative consequences

in romantic relationships, such as jealousy (Muisse et al., 2009). We suggest that using Facebook exposes romantic partners to established jealousy triggers such as partner interactions with unknown friends or past partners (Sheets, Fredendall, & Claypool, 1997), and the resulting feelings of jealousy lead to more partner monitoring on Facebook, in turn exposing users to more potentially jealousy-provoking information. Marshall, Bejanyan, Di Castro, and Lee (2012) propose a similar mechanism, though these mechanisms have not been tested experimentally.

Researchers have begun to study people's covert use of Facebook to observe other's activities, termed *partner monitoring* (Darvell, Walsh, & White, 2011), *social surveillance* (Steinfeld, Ellison, & Lampe, 2008), or *interpersonal surveillance* (Tokunaga, 2011). Over 60% of undergraduate students report using Facebook to keep tabs on others, including romantic partners (Stern & Willis, 2007). In one sample of college students, 67% reported using Facebook to monitor a former romantic partner, and a smaller percentage of students use Facebook to engage in more intense cyberstalking and harassment of their ex-partners (Lyndon, Bonds-Raacke, & Cratty, 2011).

Some differences in how men and women use Facebook have been noted. For example, women spend more time managing their Facebook profile, photos, and relationships than men do; they also identify more with the public reasons for social network site use, such as the desire for approval from others, than do men (Stefanone, Lackaff, & Rosen, 2011). In addition, relationship partners are a more important part of women's identity construction online than they are for men (Magnuson & Dundes, 2008), and therefore, women may be more attentive to relationship-relevant information on Facebook, especially in response to threats or concerns about the relationship (e.g., feelings of jealousy). In line with previous research (Marshall et al., 2012; Muise et al., 2009), we predict that Facebook-related jealousy will be associated with increased partner monitoring on Facebook. We also test the central prediction that

gender will moderate this association, such that women will engage in increased partner monitoring when jealous, but no such association would exist for men.

Anxious attachment as a mechanism

Attachment theory has been used to understand differences in people's responses to relationship threats. Individual differences in attachment are best conceptualized along two continuous dimensions of attachment anxiety and avoidance; those who score low on both dimensions are characterized as securely attached (Brennan, Clark, & Shaver, 1998). Those high in anxious attachment desire intense closeness with a partner but fear rejection and are highly attentive to relationship threats. In contrast, those high in avoidance are uncomfortable with closeness and tend to suppress or dismiss relationship threats (Brennan et al., 1998; Mikulincer & Shaver, 2007). Attachment anxiety and avoidance have been shown to reliably predict differences in the way people experience romantic and sexual relationships (see Birnbaum, 2010). For example, more anxiously attached individuals are more prone to jealousy than those who are securely attached (Hazan & Shaver, 1987; Knobloch, Solomon, & Cruz, 2001; Sharpsteen & Kirkpatrick, 1997) and engage in more partner monitoring than less anxious people (Guerrero, 1998). Partner monitoring on Facebook has been shown to be more likely for individuals who are anxiously attached to their romantic partner, a finding that was replicated for daily interactions (Marshall et al., 2012).

Attachment theory has also been used to explain gender differences in responses to emotional and sexual infidelity (Levy & Kelly, 2010). In a review of the literature on attachment, Del Giudice (2011) found that in general women score higher on attachment anxiety than men (whereas men score higher than women on attachment avoidance), and these differences peak during young adulthood. A growing body of research has also begun to show differences in the ways that men and women express attachment anxiety. For example, in a daily experience study

about self-disclosure during partner interactions, Bradford, Feeney, and Campbell (2002) found that anxiously attached women rated their interactions with their partner as more negative than women low in anxiety, but anxiously attached men did not have this same tendency. Birnbaum (2007) also found that attachment anxiety was represented differently in men and women, as evidenced by differences in the nature of their sexual fantasies. In her research, anxiously attached women were more likely to fantasize about sexual encounters outside their relationship, whereas anxiously attached men were more likely to have romantic fantasies. For these reasons, we believe that differences in attachment style may help to explain the proposed differences in the way men and women respond to feelings of jealousy.

The current research

To determine whether men and women differ in the amount of partner monitoring following a relationship threat, we examine partner monitoring behavior in a simulated Facebook environment in Study 1, and in Study 2 we test the association between participants' daily feelings of jealousy and daily time spent on their partner's Facebook page. We also test whether gender differences in anxious attachment can account for predicted gender differences in the association between jealousy and partner monitoring on Facebook.

Study 1

In Study 1, we use experimental manipulation to test our central prediction that men and women will differ in their amount of partner surveillance in response to feelings of jealousy. Because this could not easily be done within participants' own relationships, we created a fictitious Facebook environment, where participants were provided with a profile that they were asked to imagine was their own. We then triggered jealousy by directing participants to their ostensible partner's profile page, where they were exposed to a photo of their partner with an attractive member of the other sex.

We manipulated the identity of the person in the photo with their partner, but the Facebook profile photos and information were identical in each of the conditions. In Condition 1, participants were told that the person in the photo with their partner was unknown to them, a condition where the person's identity is ambiguous and the situation is potentially threatening to the relationship. In Condition 2, participants were told the person in the photo was a mutual friend, a condition where the person's identity is not ambiguous but where there may still be some degree of relational threat. In Condition 3, we informed participants that the person in the photo with their partner was their partner's cousin, which served as our control condition.

Similar to studies using a "choose-your-own adventure" format (see Vicary & Fraley, 2007), participants could choose what they wanted to do after seeing their partner's page with the target photo. We measured the amount of time that they spent searching the simulated Facebook environment after being exposed to the photo. The simulated Facebook site was interactive and participants could visit their ostensible partner's profile, the rival's profile, and several other profiles in order to enhance the authenticity of the site. They could also access photo albums and status updates on the main profiles. Given previous research suggesting that women are more likely to engage in snooping behaviors than men (Guerrero et al., 1993), we predicted that women would spend more time searching for information on our simulated Facebook environment in response to jealousy, whereas men would not differ across conditions in the time they spent creeping. Specifically, we predicted that participants who were exposed to the photo of their partner with an unknown person would report higher levels of jealousy than those exposed to a photo of their partner with their cousin or a mutual friend, but that the mutual friend would provoke more jealousy than the cousin (main effect of condition on jealousy). We also predicted that men and women would differ in the amount of time they spend searching for information in response to jealousy. Women exposed to a photo of the unknown person would spend

more time creeping than those exposed to the photo with the mutual friend or cousin, and more time creeping in response to the photo of the mutual friend than the cousin, whereas men's search behavior would not significantly differ across conditions (Gender \times Condition on search time).

Method

Participants and procedure

Participants in Study 1 were 160 (83 men, 77 women) undergraduate students, between 17 and 33 years old ($M = 19.16$, $SD = 1.68$). They were recruited for the study through the psychology participant pool at a medium-sized Canadian University. The study criteria were that participants be current Facebook users, identify as heterosexual, and currently, or have previously been, in a relationship where both they and their partner were Facebook "friends." Participants were predominantly White/Caucasian (85.4%), with South Asian (3%), East Asian (3%), Southeast Asian (1.8%), Black/African Canadian (1.8%), Middle Eastern (1.8%), Hispanic (1.8%), Native (.6%), and multiethnic identities (.8%). The majority of participants were seriously dating one person (51.9%), 34.4% were single, and the remaining participants were casually dating one or more persons (10%) or were in an open relationship (3.8%). To consider whether relationship status influenced our results, participants who were seriously dating someone at the time of the survey were coded as 1 and those who were not committed to one person (i.e., single, casually dating or in an open relationship) were coded as 0, and we entered this as a covariate in our analyses.

Students in the participant pool who met the criteria could sign up for the study online and scheduled a time to come to our lab to participate. Upon arrival at the lab, participants were greeted by a research assistant and were asked to complete a brief demographics questionnaire on the computer. Once completed, the research assistant directed participants to a simulated Facebook website that we created for the purpose of this study. Participants were taken to the profile of a person

of the same gender as them and were told to imagine that this was their own Facebook profile page. This profile was linked to another profile that participants were told to imagine belonged to their current romantic partner. Participants were then taken to the Facebook page of their ostensible partner and shown a picture of their partner with a member of the other sex.

Participants were randomly assigned to one of the three conditions. The person in the picture with their partner was reported to be: (a) an unknown person, (b) a mutual friend, or (c) their partner's cousin. Following exposure to this picture, participants were allowed to search the simulated Facebook site for as long as they wanted and were instructed to log out of the site once they finished searching. The site was set up to record the amount of time they spent searching from the time they viewed the photo to when they clicked *logout*. The amount of time recorded was our partner monitoring outcome variable in this study, and was designed to address some of the limitations of self-report measures. When participants finished searching, they then responded to an online survey with a series of questions that assessed their reaction to the photo.

Measures

Jealousy in response to the partner's Facebook profile. Participants were asked to "continue to imagine that the Facebook page you just saw was your romantic partner's page. Answer the following questions about how you would feel in response to seeing this information." Participants then responded to nine items (adapted from Pfeiffer & Wong, 1989, Multidimensional Jealousy Scale) to assess how jealous they were feeling from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include: "I would suspect that my partner is secretly seeing someone else" and "I would suspect that my partner may be attracted to someone else." The items demonstrated good reliability ($\alpha = .81$).

Manipulation check. Four questions were included at the end of the survey to determine how closely the experiment mirrored

participants' typical Facebook use. The items were rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*): "It was easy for me to imagine that the Facebook pages presented were my own profile and my partner's profile," "My reactions to the Facebook page presented in this study were similar to how I might react when using Facebook outside of this study," "The way I searched for information on the Facebook page today is consistent with how I would normally search for information on Facebook," and "I had a hard time getting into the story presented here today" (reverse coded). The results of the manipulation check suggest that participants' use of Facebook during the experiment was consistent with their typical use ($M = 5.61$, $SD = 1.22$). On average participants either somewhat agreed or agreed that their use was consistent with their typical use and that it was easy to get into the story. There were no significant gender differences on the manipulation check, $t(147) = -.29$, $p = .77$.

Results

Hypothesis testing

A multivariate analysis of covariance (MANCOVA) was conducted to test the effect of gender (man, woman) and condition (cousin, friend, unknown) on feelings of jealousy and the amount of time they spent searching on the simulated Facebook site, with relationship status as a covariate.¹ The results revealed a main effect of gender on jealousy, $F(3, 150) = 16.16$, $p < .001$, with women ($M = 3.76$, $SD = 1.05$) reporting more jealousy on average across the conditions than men ($M = 3.17$, $SD = .95$). The results also indicated a main effect of condition on jealousy, $F(3, 150) = 8.87$, $p < .001$, and search behavior, $F(3, 150) = 5.43$, $p = .02$. Since there were three conditions, Tukey's honestly significant difference (HSD) post hoc tests were conducted to determine the conditions that are significantly different. Participants who were told the person in the

photo was unknown ($M = 3.60$, $SD = .13$) or a mutual friend ($M = 3.81$, $SD = .13$) reported significantly more jealousy than those who were told the person was their partner's cousin ($M = 3.05$, $SD = .13$, $ps < .001$ and $< .05$ respectively), but the mutual friend and unknown person conditions were not significantly different from each other. In terms of search behavior, the photo with the unknown person ($M = 168.40$, $SD = 13.56$) elicited more search behavior than the photo with the cousin ($M = 120.13$, $SD = 12.27$, $p = .03$) or the mutual friend ($M = 108.40$, $SD = 13.17$, $p = .01$).

As shown in Figures 1 and 2, there was also a significant interaction between gender and condition on jealousy, $F(3, 150) = 3.65$, $p = .03$, and search behavior, $F(3, 150) = 4.18$, $p = .02$. Table 1 reports the means and standard deviations across gender and condition. As predicted, women reported significantly more jealousy in response to the photo with the mutual friend and the unknown person than the cousin ($ps < .05$); however, those exposed to the photo with the unknown person did not report significantly higher jealousy than those exposed to the photo of the mutual friend. Conversely, men reported significantly more jealousy in response to the photo with the mutual friend than either the unknown person or the cousin ($ps < .05$). However, men's search behavior followed the inverse pattern to their jealousy; men searched significantly less in response to the photo with the mutual friend than with the unknown person or the cousin ($ps < .05$).

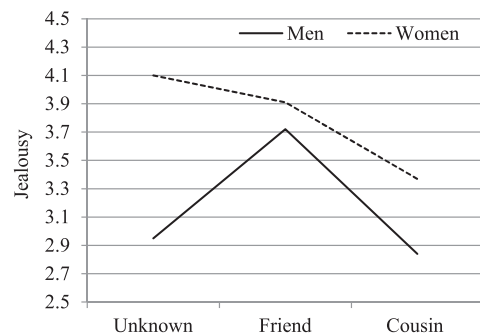


Figure 1. Interaction between condition and gender on feelings of jealousy in Study 1.

1. Note that analyses were conducted both with and without relationship status as a covariate and the results were the same for all factors.

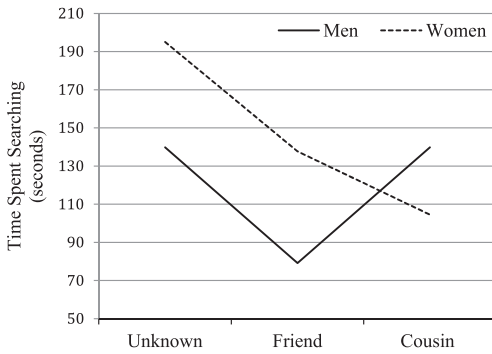


Figure 2. Interaction between condition and gender on search behavior in Study 1.

In contrast to the pattern for men, women's search behavior followed the same pattern as their self-reported jealousy; women spent significantly more time searching in response to the photo of the unknown person than to the mutual friend or the cousin, and more time searching in response to the photo with the mutual friend than the cousin ($ps < .05$).

Discussion

The current findings provide experimental evidence for a previous correlational finding that jealousy predicts partner monitoring on Facebook (Marshall et al., 2012; Muise et al., 2009). In the condition where women

reported the most jealousy, they also spent the most time searching, whereas in the condition where men reported the most jealousy, they spent the least amount of time searching. This provides partial support for our hypothesis. As expected, the amount of time women spent searching corresponded to their feelings of jealousy. However, we expected that men's search behavior would not differ across conditions, and in fact, in response to greater jealousy men spent *less* time searching.

It is important to note that men reported significantly more jealousy in response to the photo of their partner with a mutual friend than with the unknown person or cousin, and women reported significantly more jealousy in response to both the mutual friend and the unknown person than the cousin. Although women reported the most jealousy in response to an unknown person, which was consistent with expectations, this was not significantly different than in response to a mutual friend. These findings suggest that it is not simply the ambiguous identity of the person that triggers jealousy and partner monitoring but that cross-sex friendships can pose as much threat (and for men in this sample, more threat) as an unknown person. Past research has found that spending time with an opposite sex friend can evoke jealousy in a partner, and in some cases individuals may expect

Table 1. Means and standard errors across condition and gender in Study 1

Dependent variable	Gender	Condition	<i>M</i>	<i>SE</i>
Jealousy	Men	1 Unknown	2.95	0.18
		2 Friend	3.72	0.17
		3 Cousin	2.84	0.18
	Women	1	4.10***	0.19
		2	3.91	0.18
		3	3.37**	0.18
Search behavior (seconds)	Men	1	139.75	18.43
		2	79.14	18.11
		3	139.78	18.76
	Women	1	195.04***	19.90
		2	137.65***	19.12
		3	104.48**	18.76

Note. Significance markers (*) denote that women's mean is significantly different from men's mean.

** $p < .01$. *** $p < .001$.

their partners to end or modify their opposite sex friendships (Hansen, 1985). Despite their wide prevalence, defining a cross-sex friendship to members of one's social group can be challenging (Hand & Furman, 2009; O'Meara, 1989); people may assume or inquire as to whether cross-sex friends have a sexual or romantic relationship. The current findings suggest that men may have concerns about their female partner's cross-sex friendships. According to past research, posting pictures with friends is a common occurrence on Facebook (Christofides, Muise, & Desmarais, 2009), and the current findings suggest that pictures with cross-sex friends can provoke feelings of jealousy in heterosexual relationships.

Study 2

To extend the ecological validity of the findings from Study 1, which was based on a hypothetical scenario, we conducted a 14-day daily experience study with couples in dating relationships. In Study 2, we considered gender differences in the daily association between feelings of jealousy and partner monitoring on Facebook. Daily experience studies have the advantage of reducing recall bias by asking participants about their experiences as close in time as possible to when they occurred (Kahneman, 2000). In Study 2, we also sought to uncover the mechanism responsible for the differences between men and women in their response to jealousy. One promising avenue concerns individual differences in adult attachment, and therefore, we test attachment anxiety as one mechanism for explaining gender differences in partner monitoring in response to feelings of jealousy.

In short, Study 2 provides two main extensions of the previous study. First, we test the hypothesis that jealousy is associated with partner monitoring at the daily level in a sample of dating couples. Specifically we predict that on days when participants report more Facebook-related jealousy they will spend more time on their partner's Facebook page. We also predict that this association will be moderated by gender such that on days when women report greater jealousy,

they will spend significantly more time on their partner's Facebook page, but men will not. Second, we test attachment anxiety as the mechanism for gender differences in response to jealousy because men and women have been shown to respond differently to their feelings when higher in anxious attachment (Birbaum, 2007; Bradford et al., 2002).

Method

Participants and procedure

Participants were 108 dating couples ($N = 216$) recruited from a small Canadian University. The participants ranged in age from 19 to 31 ($M = 21.05$, $SD = .94$). In order to be eligible, participants had to be involved in a heterosexual dating relationship where both partners used Facebook, and both partners had to agree to take part in the study. The participants had been in their current relationship from 2 to 73 months ($M = 73.00$, $SD = 19.74$) and 9% of the couples were living together. Participants comprised a diverse range of ethnic backgrounds; 40% were European, 20% were Asian, 8% were Black/African American, 5% were Latin American, 2% were Aboriginal, and 25% self-identified as "other."

The participants completed a background survey as well as a 14-day daily experience study and received \$40 in exchange for their participation. Participants were asked to complete a 10-min online survey each night before going to bed for 14 consecutive nights. On the 1st day of the study, participants were also asked to complete a 30-min background survey in addition to the daily survey. Participants were instructed to complete the surveys independently from their partner. To maximize compliance with the daily part of the protocol, reminder emails were sent to the participants who had not completed their daily diaries by 10 p.m. each night.

Background measures

Facebook use. Participants were asked three questions about their Facebook use: "On average, approximately how many minutes per

day do you spend on Facebook?" "Approximately how long in months have you had a Facebook account?" "Approximately how many 'friends' do you have on Facebook?" Participants responded by entering the number of minutes, months, and friends.

Trait jealousy. Participants responded to Pfeiffer and Wong's (1989) Multidimensional Jealousy Scale to assess their general propensity toward jealousy. Items were rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*) and assessed emotional, cognitive, and behavioral aspects of jealousy (e.g., "I suspect that my partner is secretly seeing someone else" and "I suspect that my partner may be attracted to someone else"). The 17-item scale demonstrated excellent reliability ($\alpha = .90$).

Trust. Consistent with previous research on Facebook behavior in interpersonal relationships (Muise et al., 2009), trust was assessed using the 20-item relationship subscale of the Trust Scale (Couch & Jones, 1997), which includes statements about levels of trust in a romantic relationship such as "I am afraid my partner will betray me" (reverse coded). Items were rated on a 5-point scale from 1 (*very untrue of me*) to 5 (*very true of me*). The measure was highly reliable in the current sample ($\alpha = .95$).

Facebook jealousy. Jealousy in the context of Facebook was measured using the 27-item Facebook Jealousy Scale (Muise et al., 2009). Items are rated on a 7-point scale from 1 (*not at all likely*) to 7 (*very likely*) and include "How likely are you to feel jealous if your partner posts a picture with a person of the opposite sex?" and "How likely are you to worry that your partner will become romantically involved with someone on Facebook?" The scale demonstrated excellent reliability in this sample ($\alpha = .96$).

Attachment. Attachment was measured using the 12-item Experiences in Close Relationship–Short Form (Wei, Russell, Mallinckrodt, & Vogel, 2007). Items assess attachment anxiety (6 items; $\alpha = .77$; "I worry

romantic partners won't care about me as much as I care about them") and attachment avoidance (6 items; $\alpha = .77$; "I try to avoid getting too close to my partner") and are rated on scale from 1 (*disagree strongly*) to 7 (*agree strongly*).

Daily measures

Facebook use. Each day, participants reported the number of minutes they spent on Facebook.

Facebook jealousy. Each day, participants responded to the following statement from 1 (*strongly disagree*) to 7 (*strongly agree*): "Information posted on Facebook made me feel jealous today."

Partner surveillance. Each day, participants reported the number of minutes they spent viewing their partner's Facebook page.

Results

On average, participants completed 12 diaries across the 14-day study (range = 1–14, $M = 12.45$, $SD = 3.72$) for a total of 2,714 days across participants. Participants had been using Facebook for 12 to 84 months ($M = 54.72$, $SD = 12.22$) and had an average of 465 Facebook friends (range = 25–1,797, $SD = 129.15$). On average participants reported spending 56 min per day on Facebook (range = 25–0–300, $SD = 48.19$), with women ($M = 66.84$, $SD = 53.19$) spending significantly longer than men ($M = 46.14$, $SD = 40.42$), $t(213) = 3.24$, $p < .001$. However, over the course of the daily experience portion of the study, women ($M = 2.75$, $SD = 4.75$) did not spend significantly more time than men monitoring their partner on Facebook ($M = 2.05$, $SD = 2.21$), $t(213) = 1.33$, $p = .19$. Women did, however, report higher levels of Facebook jealousy ($M = 3.03$, $SD = 1.33$) and attachment anxiety ($M = 3.47$, $SD = 1.06$) than did men ($M = 2.39$, $SD = 1.19$), $t(213) = 3.75$, $p < .001$, and ($M = 3.00$, $SD = 1.35$), $t(213) = 2.81$, $p = .005$, respectively).

Daily feelings of jealousy and partner monitoring

Our first set of predictions concerned the link between daily feelings of Facebook-related jealousy and time spent on a partner's Facebook page. A three-level multilevel model with a random intercept was used to account for the fact that days are nested within people who are nested within couples. All continuous daily predictors were group-mean centered to assess whether day-to-day changes from a participant's own mean in jealousy is associated with partner monitoring. Consistent with our hypotheses, on days when participants reported higher levels of jealousy they spent more time monitoring their partner on Facebook, $b = .85$, $t(2218) = 2.55$, $p = .01$. Also as predicted, this association was moderated by gender such that women spent more time on a partner's page in response to increased jealousy than men, $b = 1.03$, $t(2218) = 2.45$, $p = .02$. Simple slopes were examined (Aiken & West, 1991) and the analysis revealed that women spent significantly more time on their partner's page on days they felt jealous ($t = 4.17$, $p < .001$), whereas men did not ($t = .40$, $p = .69$; see Figure 3). The number of minutes spent on Facebook was associated with spending more time on a partner's Facebook page, $b = .05$, $t(2265) = 4.25$, $p < .001$, but the results remained significant after controlling for this.

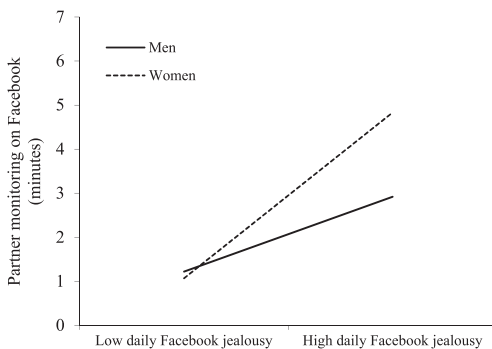


Figure 3. Interaction between daily feelings of Facebook-related jealousy and gender on time spent on a partner's Facebook page in Study 2.

The role of attachment anxiety

Our next set of predictions concerned the mechanism responsible for the association between gender, jealousy, and partner monitoring on Facebook. We predicted that attachment anxiety is one variable that explains gender differences in partner monitoring in response to jealousy. For these analyses, we considered between-person differences in Facebook-related jealousy and attachment anxiety (as measured in the background survey) and the amount of time a person spent monitoring their partner's Facebook page over the course of the 2-week diary study (an aggregate of minutes spent on partner's page). We hypothesized that the interaction between Facebook jealousy and gender on partner monitoring would be mediated by attachment anxiety. In order to test this hypothesis, we conducted a mediated moderation analysis (Muller, Judd, & Yzerbyt, 2005).

First, gender, Facebook-related jealousy, and their interaction were entered as predictors of partner monitoring on Facebook. As shown in Table 2, participants who reported higher levels of Facebook jealousy spent more time on their partner's Facebook page over the course of the diary, and this association was moderated by gender. Next, we tested whether this moderation effect is mediated by attachment anxiety. Higher levels of Facebook jealousy were associated with higher levels of attachment anxiety. In the final model, there was a significant interaction between attachment anxiety and gender and the moderation of Facebook jealousy by gender was no longer significant. The pattern of results is consistent with mediated moderation and suggests that attachment anxiety explains the interaction between Facebook-related jealousy and gender on partner monitoring on Facebook. For all participants, regardless of gender, Facebook-related jealousy is associated with attachment anxiety. As shown in Figure 4, for women, higher levels of attachment anxiety led to increased partner monitoring on Facebook ($t = 4.08$, $p < .011$), whereas for men, higher anxiety was not significantly associated with increased partner monitoring ($t = .39$, $p = .69$).

Table 2. Mediated moderation analyses for Study 2

Predictors	Step 1 Outcome: Partner monitoring		Step 2 Outcome: Attachment anxiety		Step 3 Outcome: Partner monitoring	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Facebook jealousy	.34	4.91***	.44	7.25***	.18	1.69
Gender	.04	0.52	.11	1.75	.04	0.55
FB Jealousy × Gender	.21	2.07*	−.07	−0.79	.09	0.89
Attachment anxiety					.02	0.17
Anxiety × Gender					.25	2.72**

* $p < .05$. ** $p < .01$. *** $p < .001$.

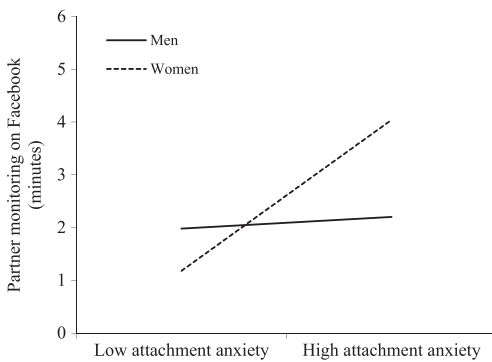


Figure 4. Interaction between gender and attachment anxiety on time spent on a partner's Facebook page in Study 2.

Attachment avoidance was not significantly associated with visiting a partner's Facebook page, $b = -.20$, $t(198) = -.69$, $p = .49$, and the mediated moderation analyses remained significant when attachment avoidance was controlled. Trait jealousy was significantly associated, $b = .88$, $t(198) = 3.17$, $p = .002$, and trust was marginally associated, $b = .36$, $t(198) = 1.63$, $p = .10$ with visiting a partner's Facebook page. Relationship length was not associated with visiting a partner's Facebook. All associations remained significant after controlling for these factors.

Discussion

In Study 2, using a daily experience methodology, we replicate the findings from Study

1 and show that the association between Facebook-related jealousy and partner monitoring is moderated by gender. On days when women felt greater jealousy they spent more time on their partner's Facebook page, but this association was not significant for men. While Study 1 provides important information about the direction of the relation between jealousy and creeping, Study 2 extends these findings to the daily experiences of real-life couples. These findings are consistent with a growing body of research that suggests Facebook use reflects offline experiences. For example, Ellison, Steinfield, and Lampe (2007) found that people's online friendships reflect their offline friendships, Back and colleagues (2010) found that judgments of personality based on Facebook profiles are consistent with people's actual personalities, and Graham, Sandy, and Gosling (2011) found that people's behavior on Facebook provide a reasonable source of information about actual behavior.

Study 2 also provides support for attachment anxiety as one mechanism for gender differences in responses to jealousy. Feelings of jealousy are linked to attachment anxiety, and for women, but not for men, anxiety is associated with increased partner monitoring on Facebook. These findings are consistent with Marshall and colleagues (2012), whose research suggests that anxiously attached individuals use Facebook more for partner surveillance. Additionally, our findings show that this is especially true for women who are anxiously attached, which enhances our

understanding of the gender differences in the way attachment anxiety affects men's and women's behavior. These findings support recent findings in the attachment literature that suggest that attachment anxiety may be enacted differently in women and men (e.g., Birnbaum, 2007).

General Discussion

The current research considers gender differences in response to jealousy in the context of interactions on the social network site, Facebook. Across two studies—an experimental study and a dyadic daily experience study—we demonstrate that in response to feelings of jealousy, women engage in partner monitoring on Facebook to a greater degree than men. These findings are consistent with previous research about the association between Facebook jealousy and partner monitoring (Marshall et al., 2012; Muise et al., 2009), as well as research suggesting that, in general, women are higher in behavioral jealousy (e.g., snooping) than are men (Guerrero et al., 1993). Additionally, Study 2 suggests that differences in the expression of attachment anxiety are one explanation for gender differences in response to jealousy-provoking information.

Implications for gender differences in response to jealousy

Research findings on the role of gender in the experience and expression of jealousy have been inconsistent (see Aylor & Dainton, 2011). The current research provides new insight into the link between jealousy, gender, and partner monitoring and does so in a medium that has not previously been explored in this way. Facebook provides an excellent forum for this type of research since it enables people to search for information about their partner without fear of discovery. It also provides a unique opportunity for researchers in that it enables them to study not only people's feelings in response to jealousy, but also their behavior. Wilson, Gosling, and Graham (2012) identify a number of benefits

to studying behavior via Facebook, including the ability to study behaviors that are difficult to assess using other means. In the case of partner monitoring, it provides researchers with a way of comparing what people say and feel with the actual events that have occurred.

The current findings suggest that, at least in the context of Facebook, women spend more time monitoring their partner's activities in response to jealousy than men. In general, women spend more time managing their Facebook profiles (Stefanone et al., 2011), and given that romantic relationships are more important for women's online identity than men's (Magnuson & Dundes, 2008), monitoring a partner's activities, particularly in response to a relationship threat, may allow women to keep tabs on how their relationship is represented. In addition, anxiously attached individuals tend to be hypervigilant to relationship threats (Brennan et al., 1998; Mikulincer & Shaver, 2007), and for women, this is linked to increased partner surveillance. Although anxiously attached men experience more jealousy than less anxious men, this is not associated with increased partner monitoring. As such, the current findings indicate that anxious attachment may be enacted differently for men and women.

It is possible the public nature of romantic relationships on Facebook incites partner monitoring when women feel threatened (as an attempt to manage the image of one's relationship) or it may be that monitoring a partner on Facebook in response to a threat is one way that anxiously attached women seek reassurance. New research on the way young women use Facebook shows that their expectations are different than they are for young men in that they feel others expect them to monitor Facebook in order to know what is happening within their network, what others are feeling, and to provide comments and support (Steeves, Bailey, & Regan, 2012). In the context of romantic relationships, these expectations may lead women to feel that visiting their partner's page is the appropriate and expected response to feelings of jealousy brought out by the site.

Navigating romantic relationships in the age of Facebook

Facebook has become ubiquitous among undergraduate students and most other age groups (InsideFacebook, 2010); as such, it is important to learn about the potential relational consequences of this increased access to information about a romantic partner. A growing body of research has examined the role of seeking out potentially threatening information on relationship quality (Afifi, Dillow, & Morse, 2004; Ickes, Dugosh, Simpson, & Wilson, 2003; Ickes & Simpson, 1997, 2001). A high motivation to seek out relationship-threatening information can be harmful to relationships, and is associated with lower levels of trust, more “snooping” behavior, and a greater likelihood of breaking up (Ickes et al., 2003). With the increasing ease with which partner monitoring can be performed online, it will be important to learn more about the way this behavior impacts relationship quality. Feeling jealous and monitoring one’s partner are associated with relationship dissatisfaction (Elphinston & Noller, 2011), but it may be difficult for people to stop creeping as it has been described as addictive (Muise et al., 2009).

Partner surveillance on social network sites such as Facebook seems to challenge relationship norms. Snooping is traditionally seen as a violation of privacy (Petronio, 1994), but on Facebook, information is generally shared with a wide group of people. Despite this, searching for relationship-relevant information online is still appraised negatively, as evidenced by the terms used to describe it, such as *creeping* and *facestalking*. Although these terms imply that there is something unacceptable about the behavior, the content has been posted in the public domain. As a result, individuals may be confused as to how to respond to information they access online, especially when this information is perceived to be relationally threatening. A further complication is that men and women may experience different norms of behavior in this context (Bailey, Steeves, Burkell, & Regan, 2013).

Limitations and future directions

Our findings indicate several directions for future research. Participants in the current research were undergraduate students in relatively new relationships; researchers may want to explore these associations in older, more established couples. In addition, we do not know what specific aspects of the information on Facebook are linked to the experience of jealousy. In Study 1, we triggered jealousy, such that all participants were receiving the same information, but in Study 2 participants simply reported whether information posted on Facebook made them feel jealous today. Our previous work (Muise et al., 2009) indicates several common triggers of jealousy, such as a partner becoming friends or being tagged in a photo with an attractive rival or the partner posting a relationship status or update that does not reflect high relational commitment, which might trigger jealousy, but in Study 2 we do not know exactly what information triggered jealousy.

An important avenue for future research is to examine romantic partners’ reactions to information accessed on Facebook and the implications for relationship quality. Past research demonstrates that individuals who communicate their feelings of jealousy with their romantic partner feel more satisfied than those who avoid discussing these feelings (Andersen, Eloy, Guerrero, & Spitzberg, 1995). Sheets and colleagues (1997) found that when participants were asked to react to their partner’s jealousy, acts of reassurance (i.e., emphasizing their continued affection and attraction) were positively associated with relationship quality, but we currently know little about how couples manage their relationships in the context of Facebook and the implications for relationship satisfaction.

Conclusion

In conclusion, the current research provides support for gender differences in response to jealousy on Facebook, such that women monitor their partners in response to jealousy whereas men do not. The widespread

sharing of information on sites such as Facebook makes this association particularly relevant in that Facebook may increase romantic partners' exposure to jealousy triggers and provide easy opportunities for partner monitoring. In the context of Facebook, it seems that, at least for women, "the ear of jealousy heareth all things."

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