

People Tend to Wind Down, Not Up, When They Browse Social Media

GALEN PANGER, University of California, Berkeley, USA

Researchers have focused intensively on the emotional effects of browsing social media, with many emphasizing possible negative effects and others suggesting the positive emotions in status updates are contagious. Despite this focus, however, very few studies have investigated the actual emotional experience of browsing social media in the moment, and none with more than a few emotions, making it difficult to understand the effects research should endeavor to explain. To address this gap, I use experience sampling with diverse samples of Facebook ($N = 362$) and Twitter ($N = 416$) users, assessing the browsing experience across a wide range of emotions. Surprisingly, results provide little evidence of robust positive or negative effects, suggesting instead that the primary effect of browsing social media is a lessening of arousal. That is, contrary to stereotype, people tend to wind down — feel more relaxed, sleepy, bored and so on — not wind up.

CCS Concepts: • **Human-centered computing** → **Social media**; • **Human-centered computing** → **Empirical studies in collaborative and social computing**

KEYWORDS

Emotion; social media; Facebook; Twitter; social comparison; emotional contagion; envy; flow; arousal

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1 INTRODUCTION

In the years since social media services achieved broad adoption, researchers have sought to understand their emotional and well-being effects. Perhaps the largest group of studies in this area suggests Facebook, and browsing Facebook in particular, has harmful effects. Researchers in this group often point to social comparison to explain the negative effects, suggesting the efforts of friends to present themselves and their lives positively — perhaps, overly so — make us feel bad about our own lives in comparison. Other researchers point to the success of social media and reason that it is unlikely to be harmful, offering instead that the positivity of friends' status updates should make us feel positive, or that social media may induce a state of flow, typically characterized by high-arousal, positive emotions.

Despite disagreement about emotional effects, which centers on the effects of browsing social media feeds and profiles, very few studies have investigated the actual emotional experience of browsing social media in the moment, in the course of day-to-day life. Further, no study to-date

Author's address: G. Panger, School of Information, University of California, Berkeley, 102 South Hall #4600, Berkeley, CA, 94720-4600, USA, galen@ischool.berkeley.edu.

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has assessed the browsing experience across a wide range of emotions, which means researchers may be unintentionally ignoring other, more substantial effects. Indeed, a popular concern about social media services like Twitter and Facebook, largely unaddressed in scholarship, is that people whip themselves into a frenzy while browsing, or in the words of one observer, habituate themselves into “a perpetual cognitive style of outrage” [54].

To address the need for a more comprehensive analysis of the emotional effects of browsing social media, I conduct experience sampling with large and diverse samples of Twitter and Facebook users, capturing moments when they browse social media and comparing these to other moments of their daily lives. Overall, evidence provides only limited support for effects posited in prior work and suggests, instead, that the primary effect has yet to be explained.

2 RELATED LITERATURE

2.1 Types of Communication

In seminal research about the effect of Facebook on well-being, Moira Burke distinguishes three types of communication on Facebook [13, 15, 17]. “Directed communication” refers to exchanges directed primarily at an individual, such as comments, messages, Likes and Wall posts, while “broadcasting” refers to status updates shared with a wide audience and “passive consumption” refers to browsing the News Feed and other people’s profiles (outside this passage, I refer to passive consumption simply as “browsing”). In analyses, Burke pairs back-end data on individual communication activities with a multi-wave survey to assess the relationship between Facebook use and eight measures of well-being over time, including life satisfaction, depression and perceived social support¹.

Burke finds distinct effects for the three forms of communication. Overall, directed communication is associated over time with *improvements* in several measures, including depression, social support and loneliness [13]. Upon further analysis, Burke finds directed communication improves well-being only when it is received from close friends (“strong ties”) and only when it is written (“composed”); directed communication from acquaintances and one-click Likes convey no well-being benefits [13, 17]. Results also show broadcasting has few effects for the broadcaster. In contrast, Burke finds passive consumption is associated with *deteriorations* in well-being, including significantly lower social support and bridging social capital (feeling part of a broader community), and marginally higher depression and stress [13, 15]. A decline in a composite measure of well-being also approaches significance ($p = .102$) [17].

2.2 Negative Effects

A finding that browsing the News Feed and profiles on Facebook may have negative well-being effects is notable given that the feed is the default view when people log onto Facebook and given that such feeds are arguably one of the primary features distinguishing social media services like Twitter, Facebook and Instagram from previous generations of Internet communications services. Though data about how much time people spend browsing versus other activities on Facebook is difficult to find, Burke’s participants in 2011 appear to spend most of their time browsing². If browsing is the primary use of Facebook, then, it is not inconceivable that the overall effect of

¹ In analyses, Burke uses multilevel regressions with a lagged dependent variable.

² Over a month, the median participant loaded News Feed nearly 800 times but sent under 200 comments, messages and Wall posts and received just over 100 in return, while broadcasting under 50 total posts [18].

Facebook — and perhaps similar services — is negative. Given the generally sustaining nature of social relationships, a finding that connecting with others this way is detrimental would be notable.

Although they involve brief timeframes in comparison to Burke’s month-long intervals between survey waves, several studies do suggest Facebook use as a whole may be detrimental to emotional and other forms of well-being [43, 50, 69, 79]. Using experience sampling over two weeks with college-age participants, Kross et al. find people feel worse at one survey point the more they have used Facebook since the last survey and find life satisfaction declines over two weeks with greater Facebook use [50]. Similarly, Sagioglou and Greitemeyer find people feel worse when experimentally assigned to use Facebook for 20 minutes compared to control activities [69], while Tromholt finds with a large and age-diverse sample that experimentally assigning people to stop using Facebook for one week improves their day-to-day emotional experience and life satisfaction compared to people assigned to continue using Facebook as normal [79]³. In line with Burke’s findings, Tromholt also finds that people who say they browse Facebook more often benefit more from the intervention [79].

To explore reasons people may have negative experiences on Facebook, Fox and Moreland conduct a series of focus groups with adult users and distill several themes from the discussions [36]. Some participants said they felt tethered to Facebook and forced to use it for fear of missing out on important social information, and some reported annoyance with features like birthday notifications, which similarly create a sense of obligation. Other participants noted feeling hurt by perceived misuses of Facebook as a communications channel, such as learning major news about a close friend by reading about it on Facebook rather than hearing it from the friend directly. Also viewed as stressors were privacy concerns and interpersonal conflicts such as “comment wars” about politics. Finally, some participants noted feelings of inferiority resulting from social comparisons with the fun and exciting lives friends appeared on Facebook to be leading. A few tied this to a notion that Facebook affected their *offline* socializing because of the need to “get a good picture” and prove they, too, had fun lives (as quoted on p. 172).

2.3 Social Comparison and Envy

Other studies have proposed that Facebook dampens well-being because it encourages procrastination [43] or is perceived as a meaningless activity [69]. The most common explanation for the negative effect, however, is social comparison. According to the original theory proposed by Leon Festinger, people are driven to evaluate themselves and do so, when few objective criteria are available, by comparison to others [35]. While Festinger focused on the need to evaluate one’s opinions and abilities because “incorrect opinions and/or inaccurate appraisals of one’s abilities can be punishing or even fatal” (p. 117), Morse and Gergen propose that people will often compare themselves with others simply to gauge their own self-worth [60]. The authors find, as do a variety of subsequent studies, that comparing unfavorably with others diminishes well-being, while comparing favorably enhances it [2, 12, 19, 28, 41, 55, 56, 70, 86]. Effects can even be seen at the socioeconomic level, where communities with higher maximum income and more people in the upper income ranks (that is, the income distribution has lower skew) report less happiness [41].

A substantial amount of research has suggested a connection between Facebook and unfavorable social comparison or envy, which results from unfavorable social comparison [20, 48,

³ Tromholt observes some non-compliance but bases analyses on condition (intention to treat), not compliance [79].

49, 53, 61, 77, 82, 83]. As highlighted by the focus groups in Fox and Moreland [36], most of these studies suggest that browsing the somewhat idealized, overly-positive status updates and profiles of others can cause unfavorable social comparisons resulting in envy and other negative feelings, and reduced self-evaluations. For example, Verduyn et al. find in a one-week experience sampling study with college-age participants that people feel worse at one survey point the more they have browsed Facebook since the last survey, and find the effect is mediated by feelings of envy [82].

In related studies, Krasnova and colleagues find that viewing the travel and leisure photos of friends is a major source of envy, and that people who experience envy while browsing Facebook are more likely to compensate by posting their own self-enhancing photos and status updates [48, 49]. While the Facebook emotional contagion experiment, discussed below, suggests people publish positive posts in response to viewing positive posts in News Feed because they feel *positive* [47], Krasnova et al. suggest a different dynamic may be at play. Namely, positive posts may drive the production of more positive posts because people instead feel *negative*, a phenomenon the authors term the “self-enhancement envy spiral” [49].⁴

Though most studies on social comparison have focused on the idealized, overly-positive nature of Facebook posts, Vogel et al. show in an experiment with undergraduates that the number of Likes and comments others receive on their posts can be a momentary source of low self-esteem [83], which is notable given findings that most people receive fewer Likes than their friends, and given that Facebook promotes posts with more Likes and comments [3, 71]. This suggests Likes and comments may be another regular source of unfavorable social comparisons on Facebook. Unfortunately, researchers have focused on social comparison on Facebook to the near exclusion of other services, so little is known about how broadly these dynamics apply. However, a survey with people who are users of both Twitter and Facebook finds Facebook is viewed as a larger source of feelings of inferiority than Twitter. With both platforms, though, participants are more likely to agree than disagree that people are “too self-promotional” [61].

2.4 Emotional Contagion, Flow and Positive Effects

To-date, perhaps the most prominent response to this literature on the negative emotional and well-being effects of browsing Facebook is the company’s emotional contagion experiment [47]. In addition to providing evidence for the spread of emotion through status updates on Facebook, the authors also sought to rebut concerns that “positive posts by friends on Facebook may somehow affect us negatively, for example, via social comparison” (p. 8790). By demonstrating through experimental shifts in News Feed that people publish more positive posts and fewer negative posts when they see more positive posts in News Feed, the authors believed they were able to put concerns about social comparison to rest⁵.

Unfortunately, however, the study caused an uproar because the company had experimented with its users’ emotions without their consent⁶. The study also suffered from several methodological issues, including internal validity problems and an inability to dismiss observationally equivalent explanations for the *like-causes-like* pattern of results, such as mimicry, conformity or the aforementioned “self-enhancement envy spiral” [49, 62]. Three years

⁴ See also Smith and Kim for a discussion of envy and common behavioral responses to envy [73].

⁵ See also <http://newsroom.fb.com/news/2014/10/research-at-facebook>.

⁶ See http://laboratorium.net/archive/2014/06/30/the_facebook_emotional_manipulation_study_source.

later, the company publicly acknowledged the evidence suggesting browsing Facebook may be detrimental to well-being [38].

Of course, it seems obvious that people may browse social media not just out of a sense of obligation or for fear of missing out, but because they find it interesting and feel closer to friends when reading about their lives as they browse [16]. Certainly, emotional contagion remains a plausible emotional dynamic in social media.

Some researchers propose that social media use may even induce flow [11, p. 80; 57], a state of absorption characterized by “higher self-esteem, stronger intrinsic motivation, more intense concentration, and a greater sense that [the current activity] is important” along with above-average levels of positive, high arousal emotions like enjoyment, excitement and interest, and a below-average level of boredom [42, e.g. pp. 142-147]. In the lab, physiological measures (e.g. pupil dilation) suggest using Facebook results in more flow than control activities like viewing natural scenes [57]. Overall, while it is possible that browsing social media has a net negative effect, it seems implausible that people do not also have positive experiences. Indeed, multiple dynamics may be at play.

3 HYPOTHESES AND RESEARCH QUESTIONS

This study inquires about the emotional experience of browsing social media and how it compares to other emotional experiences in daily life. This section describes the study’s hypotheses and research questions, which are addressed in results along with exploratory analyses. Because Twitter and Facebook share many similarities, chief among them that they are organized around feeds of status updates, and because the literature provides little evidence that they should be treated differently with respect to these or closely related issues, the same hypotheses are proposed for both services.

As the literature review highlights, Facebook as a whole may undermine emotional and other forms of well-being [50, 79], and browsing Facebook may be specifically to blame due to unfavorable social comparison and envy [13, 82]. Other researchers reason that browsing social media is unlikely to be harmful, offering instead that the positivity of friends’ status updates should make us feel positive [47], or that social media might induce a state of flow, typically characterized by high-arousal, positive emotions [11, p. 80; 57].

Although evidence seems to weigh in favor of an overall negative emotional effect, I do not hypothesize an overarching negative effect because of the plausibility of arguments in favor of emotional contagion and flow; because social media feeds may be a form of social setting, which generally bring positive emotions [22, 46, 58]; and because of social media’s success. Thus, I ask:

RQ1: How positive or negative is the emotional experience of browsing social media, on average, compared to day-to-day emotional experience as a whole?

Similarly, despite the plausibility of flow, which is characterized by high arousal, I do not make an overarching prediction about the effect of browsing social media on arousal. I ask:

RQ2: How activated (aroused) or deactivated is the emotional experience of browsing social media, on average, compared to day-to-day emotional experience as a whole?

By “emotional experience as a whole,” I mean all day-to-day emotional experiences other than browsing social media. In experience sampling, I also collect data about the emotional experience

of in-person social interactions as well as other device uses (aside from browsing social media), and examine these as additional comparators for the browsing experience, given that social media may be considered a form of social setting and is a form of device use. Recognizing that multiple emotional dynamics may characterize the browsing experience, and given that evidence seems to more strongly support specific envy and flow effects that may not be reflected in overall measures, I hypothesize:

H1: Browsing social media will be characterized by greater envy compared to day-to-day emotional experience as a whole; and

H2: Browsing social media will be characterized by greater flow experience – enthusiasm, excitement and interest, and lower boredom – compared to day-to-day emotional experience as a whole.

The next section describes this study’s methodology.

4 METHOD

This study’s research design involves an opening questionnaire, one week of experience sampling, and a closing questionnaire. Experience sampling is used to gain an assessment of the emotional experience of browsing social media, as well as other device uses, social interactions with others in person, and day-to-day emotional life as a whole. The opening and closing questionnaires include demographic items as well as the Satisfaction with Life [25] and CESD-R depression [29] scales, which are used to assess reactivity (see next section). The closing questionnaire also collects participants’ 10 most recent status updates and their ratings of the emotional contents of each, which are employed in an exploratory analysis of emotional contagion below. Recruitment targeted people who tweet or post on Facebook about 1-2 times per day, which means participants in this study may be somewhat more active than the median or typical user⁷.

4.1 Experience Sampling

The experience sampling method (ESM) is employed throughout the psychological and health sciences to investigate daily life, especially emotional life [23, 42, 59, 72]. The method involves signaling participants several times per day for 1-2 weeks at random times during their waking hours to complete a brief survey known as the experience sampling form (ESF), which can range in length from a handful of items to between 30 and 50 items [e.g. see sample forms in 23, 42]. Importantly, ESM asks participants about the present moment – how they are feeling, what they are doing and so on – as they are signaled. Signaling randomly throughout the day over a period of days thus provides a measure of emotional life, both as a whole and in specific contexts, such as while interacting with others in person or browsing social media.

The key strength of ESM is that it sidesteps the impressions of memory by inquiring about specific moments as they occur. Thus, participants are able to refer to their current experiential knowledge of how they feel in the moment rather than their impressions of how they typically

⁷ For example, see rates in Burke et al. [18] and Efrati [30]. Burke et al. note that participants in their study were more active than the typical Facebook user [18]. When participants’ 10 status updates did not encompass the full length of the experience sampling week, they were invited to optionally submit their next 5 status updates.

feel in different situations [64]. Further, although interrupting people in the course of daily life provides a high degree of ecological validity, the signals can also be intrusive, which can affect attrition rates and cause “reactivity,” which occurs when the act of measuring a phenomenon, like emotion, changes it. I follow ESM best practices to manage and assess attrition and reactivity [42, 59]. To manage attrition, for example, I helped participants understand what to expect and made myself readily available to troubleshoot issues when they arose.

Despite some limitations, experience sampling demonstrates substantial reliability and validity. For example, reports of being “active” correlate with readings from heart rate and activity monitors [44], while feeling “rushed,” “tense” or “angry” correlates with blood pressure [81] and reports of stress or negative emotion correlate with cortisol [1, 34, 74-76, 80].

4.2 Defining Emotion and Well-Being

This study draws from two major theories of emotion, known as basic emotions theory and psychological construction. Basic emotions theory proposes a small set of distinct emotions defined as automatic, coordinated responses to specific regularities of the evolutionary environment, such as the need to escape from a predator (i.e. fear) or expel an impurity (i.e. disgust) [32, 33, 37, 68, 78]. While negative emotions are believed to *narrow* the thoughts and actions that come to mind to allow for decisive action in threatening situations, such as the association of anger with the urge to attack, positive emotions like interest and pride emerge in non-threatening situations and are believed to *broaden* the thoughts and actions that come to mind, enabling us to build our personal and social resources [37].

In contrast, psychological construction theory embraces a wide variety of emotions by decoupling the conscious, subjective experience of an emotion like fear from automatic processes like freezing in the presence of a threat, each of which can occur absent the other. Instead, emotions are defined as cognitions or *conceptual acts* that allow us to interpret patterns of sensation from within and outside our bodies [4, 52, 66, 67]. A key ingredient in these sensory patterns is *core affect*, defined as a simple, consciously-accessible feeling of pleasure or displeasure (known as *valence*) and drowsiness or energy (known as *activation* or *arousal*). Core affect is thought to be a neurophysiological state and, like basic emotions, is thought to facilitate affect-congruent ideation, perception, memory, judgment and behavior (i.e. positive affect tends to call to mind positive memories and encourage favorable judgments) [66].

Though the two theories differ on whether emotions are few and biologically-given, or varied and a product of understanding, the theories are complementary when used with self-reports of conscious, subjective experience. Core affect provides a simple way to summarize and relate emotions to one another, while emotions themselves carry more specific meanings and contextual associations [e.g. 31]. There is also some consensus that self-reports provide the best access to the conscious, subjective and experiential elements of emotion [4, 42, 64, 66, 72].

Another important term in this study is “well-being,” which refers to the concept of “subjective well-being” or “happiness” from the positive psychology and behavioral economics literatures, as well as to a broader portfolio of psychological outcomes like social support and mental health. As used in the literature, subjective well-being has two components: (1) emotional experience, which is commonly assessed by ESM and is the focus of this study; and (2) life satisfaction, which is an evaluation of life as a whole [e.g. 27, 45]. People with a balance of more positive and fewer negative emotional experiences, and higher life satisfaction, are considered higher in subjective well-being and happier. In turn, subjective well-being is thought to promote

many benefits in addition to its inherent desirability, including cognitive flexibility, cardiovascular and immune system health, and charitable behavior [e.g. 37, 24, 27, 45]⁸.

4.3 Experience Sampling Form

During the week of experience sampling, participants are signaled 4 times per day to complete a 43-item ESF⁹, which includes 37 emotion items and 6 items inquiring about their current activity; whereabouts; whether they are interacting with others in person; what feeling they are conveying, if so (not analyzed in this study); and whether they are using a device, defined as “a computer, smartphone or tablet.” Participants who say they are using a device are able to report whether they are “talking to someone on” Twitter or Facebook, “browsing” Twitter or Facebook, or “doing something else,” with an open text field where they may further specify. All but the last item allowing for specification of “something else” is required.

As part of the closing questionnaire at the end of the experience sampling week, participants also complete a status update form (SUF) for each of their 10 most recent status updates. The SUF also has 43 items, 3 asking for the text, date and time of the status update; 37 inquiring about the emotional contents of the status update; and 3 asking for details about any photo, video or link the status update may include¹⁰.

The 37 emotion items include 1 bipolar item assessing overall valence (7 response options, from “Very negative” to “Very positive”) followed by 36 unipolar items assessing specific emotions (5 response options, from “Not at all” to “Extremely”). These items are drawn from studies of core affect [5-8, 21, 51, 65, 87], the Positive and Negative Affect Schedule (PANAS) [84], basic emotions theory [32, 33, 68] and from studies of information sharing and emotion in social media [e.g. 9, 10, 14, 48]. The 36 unipolar emotion items, shown in appendices, were randomized once and shown in the same order on the ESF and SUF. The Supplemental shows the final experience sampling and status update forms, including the exact order of emotion items.

Core affect is typically depicted as a circumplex, where nearby items correlate positively, items at 90° distance are uncorrelated and opposite items correlate negatively. Shown in Fig. 1, this study’s core affect assessment is adapted from Yik, Russell & Steiger [87], who validate a 12-point model of core affect across four studies. Items judged inapplicable to status updates (e.g. “quiet”) or receiving complaints from Mechanical Turk workers during pre-testing are substituted for similarly-located items from other studies (e.g. “sleepy”). Two items per circumplex point are assessed and neighboring points are grouped for analysis to form the positive (330°-30°), negative (150°-210°), activated (60°-120°) and deactivated (240°-300°) core affect scales. For example, the activated scale includes “Activation” and neighbors “Pleasant Activation” and “Unpleasant Activation”¹¹ (see Fig. 1).

⁸ Note that emotion and well-being are nuanced concepts, as are many important concepts. Positive emotion is seen as generally but not invariably desirable, as negative emotions are important in empathetic responses and, of course, may help us avoid danger, among other things [40].

⁹ Following best practice [42, pp. 31-59], I chose a less demanding signal rate (four times per day) and study period (one week) to offset the more demanding ESF, which is still within the norm for typical length [e.g. see forms in 23, 42].

¹⁰ Participants are instructed to submit only status updates where they are shown as the author, and only those with text, to ensure status updates include participants’ own voices. Twitter participants are also asked to omit reply tweets (at the time, anything starting with an “@” symbol) to exclude anything not broadcast to participants’ larger audiences.

¹¹ Grouping points mainly about arousal but with elements of valence, or mainly about valence but with elements of arousal, is intended to yield more reliable measures of these core affect dimensions, especially for arousal, as it is difficult to find emotion items that signify arousal without also including some element of valence [James Russell, personal communication, 2016]. Unfortunately, there is no standard assessment for core affect in wide use. The PANAS scales are not a focus of the present analyses because they blend valence with high arousal, as noted by the authors [85].

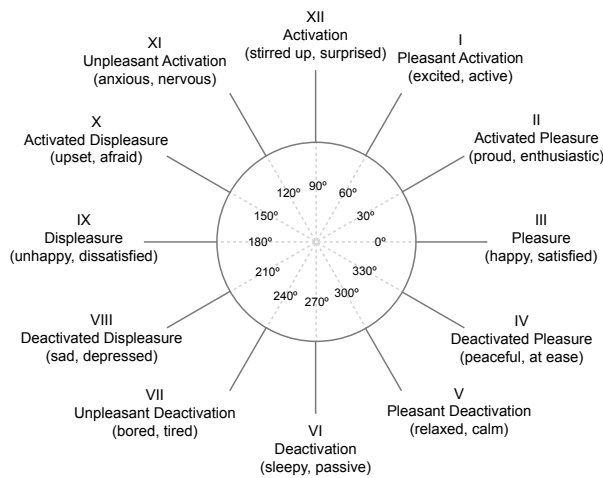


Fig. 1. The 12-point assessment of core affect for ESFs and SUFs. Points are grouped to form the positive (330°-30°), negative (150°-210°), activated (60°-120°) and deactivated (240°-300°) scales.

4.4 Recruitment and Study Administration

Participants were recruited for separate Twitter and Facebook convenience samples using advertisements on the two services, tasks on Mechanical Turk, and listings on Craigslist and the Berkeley Xlab subject pool, which includes undergraduate and graduate students and staff. About 81% of the final Twitter sample was recruited via ads on Twitter, while about 69% of the Facebook sample was recruited via Mechanical Turk due to the high cost of ads on Facebook.

Eligibility statements required that each participant be a user of Twitter or Facebook who tweets or posts “around once or twice each day from a personal account”; resides in the U.S., speaks English and is 18 years or older; carries an iPhone or Android phone; and is safe to interrupt during the day. ESM was conducted with the Paco app (<http://www.pacoapp.com>), which allows participants to set a custom signal schedule according to their waking hours. Signals are push notifications, which repeat after 5 minutes if there is no response and disappear 25 minutes later if there is still no response. As is common practice, participants can make up for a missed signal by submitting a “self-report,” which ensures moments where using a phone is ill-advised may be captured, and these are accepted if they occur within 2 hours of the signal. The study collected data on a rolling basis from June 29 to August 25, 2016, when it appeared likely that the target of 300 participants per sample would be reached. This period included the Democratic and Republican presidential nominating conventions, the release of Pokémon Go and the Summer Olympics. Participants were compensated \$25-28 and entered in a random drawing for a \$500 Apple Gift Card, which was awarded to a participant in Mississippi.

4.5 Twitter and Facebook at the Time

At the time the study was administered, in mid-2016, the browsing experiences of Twitter and Facebook were organized primarily around feeds of status updates. Status updates on Twitter were limited to 140 characters and were presented mostly in reverse chronological order, though the company had begun to take steps to surface interesting tweets out of order. The company had also not yet taken significant, visible steps to address growing concerns about harassment and

abuse on the service¹². Facebook at the time had expanded the Like button to include a series of Reactions and had begun rolling out a video tab, but had not yet introduced Stories in News Feed or taken visible steps to address well-being concerns related to browsing¹³.

5 RESULTS

5.1 Data Cleaning, Sample Characteristics and Reliability Checks

Data cleaning and preparation steps included creating scales and contextual variables, removing invalid responses, and merging data on the participant. Invalid responses included ESF “self-reports” with the Paco app that were submitted too long after the signal (see above), and ESFs and SUFs where all 36 unipolar emotion items received the same response¹⁴. In the last stage of data preparation, I averaged items over all ESFs for each participant and merged these with the opening and closing questionnaires on the participant to form the final dataset and samples. All participants in the final Facebook and Twitter samples have at least one valid browsing and one valid non-browsing ESF, and no participant appears in both samples. A secondary dataset involving SUFs was also created for use in an exploratory emotional contagion analysis, and is described in greater detail below.

From a total of 473 participants who enrolled in the Facebook study by completing the opening questionnaire and at least one ESF with the Paco app, 362 remain in the final Facebook sample, or about 77%. Among these participants, 60% identify as female and less than 1% identify as something other than male or female. About 61% are white or Caucasian, 16% are Asian, 8% are black or African-American, 5% are Hispanic or Latino, less than 1% are Native American or Alaska Native, less than 1% are Pacific Islander or Native Hawaiian, and 6% are of mixed race or ethnicity. The median age is 30 years old ($M = 32$), median income is between \$25,000 and \$50,000 and 55% have a college degree. Participants have a median of 341 Facebook friends ($M = 533$) and a majority joined Facebook prior to 2010.

For the Twitter sample, 534 participants enrolled and 416 remain in the final sample, or about 78%. Among these participants, 65% identify as female and about 2% identify as something other than male or female. About 60% are white or Caucasian, 13% are black or African-American, 9% are Hispanic or Latino, 6% are Asian, less than 1% are Native American or Alaska Native, and 10% are of mixed race or ethnicity. The median age is 31 years old ($M = 34$), median income is between \$25,000 and \$50,000, and 52% have a college degree. Participants follow a median of 302 people on Twitter ($M = 661$), have a median of 290 followers ($M = 689$) and most joined Twitter prior to 2012. Though the Facebook and Twitter samples appear to be roughly representative of their respective user populations, the Twitter sample skews somewhat female, as available figures suggest there is little gender gap on the service [39].

¹² For historical context, see e.g. https://blog.twitter.com/official/en_us/topics/product/2017/tweetingmadeeasier.html, https://blog.twitter.com/official/en_us/a/2015/while-you-were-away-0.html and https://blog.twitter.com/official/en_us/a/2016/progress-on-addressing-online-abuse.html.

¹³ See e.g. <https://newsroom.fb.com/news/2016/02/reactions-now-available-globally/>, <https://newsroom.fb.com/news/2016/04/introducing-new-ways-to-create-share-and-discover-live-video-on-facebook/>, <https://newsroom.fb.com/news/2017/03/more-ways-to-share-with-the-facebook-camera/> and <https://newsroom.fb.com/news/2017/12/hard-questions-is-spending-time-on-social-media-bad-for-us/>.

¹⁴ As they were submitted, status update texts, dates and times were also manually reviewed to remove obvious errors or fabrications, such as submitting the same text for each of the 10 SUFs. Because it is possible to imagine rare cases where choosing the same response for each emotion item is a valid response, such as “feeling nothing,” I removed ESFs and SUFs with this pattern only if it occurred in 20% or more of a participant’s ESFs and SUFs. Less than 2% of ESFs and less than 2% of SUFs not already removed during manual review exhibited this pattern.

Experience sampling signal response rates of 78% and 75% for the Facebook and Twitter samples, respectively, compare favorably with other experience sampling studies [see e.g. 42, pp. 42, 107-108]. The median Facebook participant has 23 valid ESFs (22 signaled responses and 1 “self-report”) out of 29 total signals, and the median Twitter participant has 22 valid ESFs (21 signaled responses and 1 “self-report”) out of 29 total signals¹⁵. Median completion time for valid ESFs across the two samples is less than 2 minutes.

Split-half reliability for ESFs in both samples is also on par with previous studies [42, pp. 115-118]. Averaged ESF ratings for the first and second halves of the ESM period correlate, with respect to the bipolar positive-negative item, at .68 for the Facebook sample and .57 for the Twitter sample. Taking random halves, the correlations rise to .75 for Facebook and .70 for Twitter¹⁶. As a test of ESM reactivity, the two samples showed no change in life satisfaction between opening and closing questionnaires, and while the Twitter sample also showed no change in depression, the Facebook sample did show a slight decrease in depression¹⁷.

5.2 Exploring Sample Means

In accord with the finding in positive psychology that people spend most of their time in a mild positive state (a phenomenon known as “positive mood offset”) [26], Facebook and Twitter participants rate themselves as about “Slightly positive” on average in non-browsing ESFs, at a respective 4.98 and 4.80 on the bipolar positive-negative item, which ranges from 1 (“Very negative”) to 7 (“Very positive”), with a rating of 4 corresponding to “Neutral” and a rating of 5 corresponding to “Slightly positive.” Participants also rate the emotional experience of browsing social media as about “Slightly positive” on average, at 4.89 and 4.74 for the Facebook and Twitter samples, respectively (see Appendix A).

An important first observation is that the emotional experience of browsing social media appears to be characterized predominantly by calm, relaxation and other positive, deactivated emotions, as well as happiness. Table 1 lists the top five emotions of the Facebook and Twitter browsing experiences by sample mean as well as the top five emotions for (1) all other emotional experiences (all ESFs except those in which the participant was browsing the respective service), (2) all social interactions with others in-person, and (3) other device uses (all ESFs in which the participant was using a computer, smartphone or tablet, except those in which the participant was browsing the respective service). I include the latter two contexts to further aid in

¹⁵ In comparisons, the median Facebook and Twitter participants both have 3 ESFs in which they were browsing the respective service, 9 ESFs in which they were interacting with others in person and 7 ESFs in which they were using a device for something other than browsing the respective service (median counts happen to be the same for both). As noted above, the last stage of data preparation involved averaging ESFs for each participant, which results in each participant having context-specific averages for each emotion item or scale, provided they have at least one ESF in the given context. Sample sizes for each comparison can be seen in Appendices (add 1 to the “*df*” column). Supporting the notion that browsing is the primary social media use case, ESFs suggest Facebook participants spend more than three times as many moments browsing Facebook as they do talking to others there, while for Twitter participants the multiple is nearly five times. An exploratory analysis of the talking experience is not offered to keep the study focused.

¹⁶ All correlations are significant ($ps < .0001$). For the 36 unipolar items, the first and second halves correlate at an average of .75 for Facebook and .67 for Twitter. Random halves correlate at an average of .82 for Facebook and .75 for Twitter. Again, correlations are significant ($ps < .0001$).

¹⁷ In the Facebook sample, using paired sample, two-tailed t-tests, life satisfaction did not change from the opening ($M = 4.55, SD = 1.44$) to the closing ($M = 4.55, SD = 1.48$) questionnaire, $t(340) = -0.15, p = .88, d = 0.00$, but depression did decrease slightly from the opening ($M = 1.69, SD = 0.66$) to the closing ($M = 1.63, SD = 0.64$) questionnaire, $t(340) = 2.75, p < .01, d = 0.10$. In the Twitter sample, life satisfaction did not change from the opening ($M = 4.20, SD = 1.36$) to the closing ($M = 4.17, SD = 1.46$) questionnaire, $t(355) = 0.86, p = .39, d = 0.02$, nor did depression change from the opening ($M = 1.83, SD = 0.70$) to the closing ($M = 1.80, SD = 0.72$) questionnaire, $t(355) = 1.38, p = .17, d = 0.05$.

Table 1. Top five emotions of the browsing experience and comparator contexts by sample mean.

Top emotions: Facebook participants											
Browsing Facebook			All Other ESFs			Interacting in Person			Other Device Uses		
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>
Calm	3.11	1.05	Calm	3.08	0.84	Calm	3.09	0.85	Calm	3.08	0.96
Relaxed	3.01	1.04	Relaxed	2.92	0.80	Happy	2.97	0.90	Relaxed	2.93	0.95
At Ease	2.91	1.05	At Ease	2.87	0.84	Relaxed	2.94	0.88	At Ease	2.91	0.96
Peaceful	2.90	1.08	Peaceful	2.86	0.89	Peaceful	2.91	0.92	Peaceful	2.84	1.00
Happy	2.78	1.07	Happy	2.82	0.86	At Ease	2.91	0.89	Happy	2.80	0.95

Top emotions: Twitter participants											
Browsing Twitter			All Other ESFs			Interacting in Person			Other Device Uses		
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>
Calm	3.18	0.98	Calm	3.08	0.72	Calm	3.05	0.79	Calm	3.09	0.83
Relaxed	3.10	0.99	Relaxed	3.01	0.72	Relaxed	3.03	0.79	Relaxed	3.02	0.81
At Ease	3.03	1.01	At Ease	2.95	0.74	Happy	3.03	0.83	At Ease	2.93	0.81
Peaceful	2.92	0.98	Peaceful	2.91	0.79	At Ease	3.02	0.81	Peaceful	2.90	0.87
Happy	2.79	1.00	Happy	2.82	0.78	Peaceful	2.95	0.83	Happy	2.81	0.81

understanding what may or may not be unique about browsing social media, which may be a form of social setting and is a form of device use.

As Table 1 illustrates, the emotional experience of browsing social media is very similar to the comparator contexts. Across all 36 unipolar emotion items, sample mean correlations between browsing and all other ESFs, as well as between browsing and other device uses, are .99 for both the Facebook and Twitter samples. Sample mean correlations between browsing and in-person interactions are high as well, at .97 and .96 for the Facebook and Twitter samples, respectively. Further, differences in sample means between browsing and comparator contexts are small. The average absolute value of the difference between sample means for browsing and all other ESFs is .06 (both samples), and the difference between browsing and other device uses is .06 and .05 for the Facebook and Twitter samples, respectively. Average differences between browsing and in-person interactions are a bit larger, at .11 and .13, respectively. Response options for the 36 unipolar emotion items range from 1 (“Not at all”) to 5 (“Extremely”).

Across all four contexts in both samples, “calm” has the highest average rating, which is near the midpoint of the unipolar response scale, or a moderate rating (see Table 1). The emotion with the lowest average rating for the Facebook browsing experience is “hostile,” while the emotion with the lowest average rating for the Twitter browsing experience is “envious.” “Ashamed” receives the lowest average rating for all comparator contexts across both samples. Sample means for items with the lowest averages are close to “Not at all” (see Appendices A-C).

As an alternate view of the emotional profile of browsing social media, Table 2 lists the emotions with the largest average differences between browsing and the comparator contexts, in absolute value, for the Facebook and Twitter samples (t-tests are paired sample, two-tailed; Appendices A-C list the full results). Examining these largest differences, the browsing experience is significantly less active, more sleepy and often more tired and bored – in other words, less activated and more deactivated. Compared to interacting with others in person, the browsing experience for Facebook and Twitter is also less loving and, for Facebook, less

Table 2. Top five sample mean differences between the browsing experience and comparator contexts.

Top differences: Browsing Facebook								
vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>		Diff	<i>p</i>		Diff	<i>p</i>
(Active)	-0.29	0.0000	(Active)	-0.40	0.0000	(Active)	-0.22	0.0000
Bored	0.18	0.0000	Bored	0.28	0.0000	Tired	0.18	0.0002
Passive	0.13	0.0002	Sleepy	0.24	0.0000	Sleepy	0.14	0.0037
Tired	0.12	0.0083	(Loving)	-0.24	0.0000	(Stirred Up)	-0.13	0.0002
Sleepy	0.10	0.0236	(Enthusiastic)	-0.23	0.0000	(Anxious)	-0.11	0.0013

Top differences: Browsing Twitter								
vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>		Diff	<i>p</i>		Diff	<i>p</i>
(Active)	-0.33	0.0000	(Active)	-0.49	0.0000	(Active)	-0.19	0.0000
Bored	0.19	0.0000	Sleepy	0.32	0.0000	Sleepy	0.15	0.0012
Sleepy	0.15	0.0008	Bored	0.30	0.0000	Tired	0.13	0.0088
Lonely	0.15	0.0000	(Loving)	-0.26	0.0000	Disgusted	0.11	0.0052
Disgusted	0.12	0.0017	Tired	0.26	0.0000	At Ease	0.10	0.0377

enthusiastic ($ps < .0001$). Browsing Twitter is additionally characterized by higher feelings of disgust compared to all other ESFs and compared to other device uses ($ps < .01$).

When examining top five differences by Cohen's d in the Facebook sample, "stirred up" replaces "sleepy" in comparison with all other ESFs (people feel *less* stirred up while browsing Facebook, $p < .01$), "excited" and "lonely" replace "loving" and "enthusiastic" in comparison with in-person social interactions (people feel less excited and more lonely while browsing Facebook, $ps < .0001$), and the top five differences are the same in comparison with other device uses. When ranking by Cohen's d in the Twitter sample, the top differences are the same compared to all other ESFs, "happy" and "lonely" replace "loving" and "tired" in comparison with in-person social interactions (people feel less happy and more lonely while browsing Twitter, $ps < .0001$), and "envious" replaces "at ease" in comparison with other device uses (people feel less envious while browsing Twitter, $p < .01$).

Exploring beyond the top five differences, I also note slight increases in sadness and loneliness while browsing Facebook compared to all other ESFs ($ps < .05$), and slight increases in feelings of depression and loneliness while browsing Twitter compared to all other ESFs ($ps < .01$). These differences persist in comparisons with in-person social interactions, but not in comparisons with all other device uses, except in the case of depression for Twitter, where it is still slightly elevated in comparison ($p < .05$).

Appendices A-C show sample means and t-tests of differences between browsing and the comparator contexts for all emotion items and scales. T-tests throughout this paper are paired. Note that, other than the planned comparisons of Sections 5.3 and 5.4, analyses are exploratory, and thus meeting a $p < .05$ significance level does not indicate that these results are definitive.

5.3 Valence and Arousal

Research questions 1 and 2 concern the average valence and arousal of the emotional experience of browsing social media compared to all other emotional experiences, as well as compared to in-

Table 3. Valence and arousal while browsing compared to the other listed contexts.

Valence and arousal differences: Facebook									
	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>
Positive-Negative	-0.09	0.0342	0.10	-0.24	0.0000	0.24	-0.05	0.2914	0.05
Activated	-0.09	0.0000	0.17	-0.14	0.0000	0.26	-0.10	0.0000	0.19
Deactivated	0.11	0.0000	0.21	0.17	0.0000	0.31	0.10	0.0001	0.18
Positive	-0.03	0.2251	0.04	-0.13	0.0000	0.15	-0.03	0.3897	0.03
Negative	0.02	0.2995	0.04	0.05	0.0322	0.09	0.00	0.9682	0.00

Valence and arousal differences: Twitter									
	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>
Positive-Negative	-0.06	0.2153	0.06	-0.27	0.0000	0.27	-0.03	0.5227	0.03
Activated	-0.06	0.0021	0.11	-0.13	0.0000	0.25	-0.05	0.0080	0.09
Deactivated	0.12	0.0000	0.24	0.21	0.0000	0.39	0.10	0.0001	0.18
Positive	0.00	0.9435	0.00	-0.13	0.0000	0.18	0.00	0.9533	0.00
Negative	0.05	0.0408	0.07	0.09	0.0004	0.14	0.03	0.3094	0.04

person social settings and other device uses. Table 3 shows sample mean differences, *p*-values (for two-tailed t-tests) and Cohen’s *d* effect sizes for the comparisons, and Appendices A-C display the full results. Comparisons employ the bipolar positive-negative item (with a seven-point response scale) and the four core affect scales (with five-point response scales).

Compared to all other emotional experiences, the browsing experiences of Facebook and Twitter appear to tilt slightly toward negative emotion. Browsing Facebook is less positive according to the bipolar positive-negative item, while browsing Twitter is more negative according to the core affect negative scale (*ps* < .05). The tilt away from positive emotion and toward negative emotion is more pronounced compared to in-person social settings, and non-existent compared to other device uses for both the Facebook and Twitter samples.

While findings for valence are inconsistent across comparators, results for arousal are strikingly consistent. Compared to all other ESFs, in-person interactions and other device uses, browsing Facebook and Twitter is characterized by less activation and greater deactivation, with *p*-values generally very low (see Table 3 and Appendices A-C).

5.4 Envy and Flow Experience

Hypotheses 1 and 2 predicted that browsing social media would be characterized by envy as well as emotions indicative of flow, including higher enthusiasm, excitement and interest, and lower boredom¹⁸. Limited support is found for the envy hypothesis in the Facebook sample and for the interest hypothesis in the Twitter sample, but otherwise the hypotheses are not supported (see Table 4; t-tests are one-tailed).

Across two or more comparators, browsing Facebook is characterized by *lower* excitement, enthusiasm and interest, and higher boredom, indicating that browsing Facebook may induce *less*

¹⁸ As noted above, flow is typically accompanied by positive, high-arousal feelings such as enthusiasm, excitement and interest, and less boredom [42, e.g. pp. 142-147]. The emotional experience of flow is referred to as “flow experience.”

Table 4. Hypothesized differences for specific emotions between browsing and comparator contexts. “Bored” is in parentheses because it was hypothesized to be lower while browsing.

Hypothesized differences: Facebook									
	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>
Envious	0.03	0.0801	0.06	0.04	0.0445	0.06	0.01	0.3093	0.02
Enthusiastic	-0.08	0.0080	0.09	-0.23	0.0000	0.24	-0.07	0.0361	0.08
Excited	-0.09	0.0034	0.11	-0.23	0.0000	0.25	-0.07	0.0417	0.08
Interested	-0.01	0.4445	0.01	-0.14	0.0003	0.15	-0.09	0.0148	0.10
(Bored)	0.18	0.0000	0.24	0.28	0.0000	0.38	0.07	0.0643	0.08

Hypothesized differences: Twitter									
	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>
Envious	-0.04	0.0512	0.06	-0.03	0.1373	0.04	-0.08	0.0037	0.11
Enthusiastic	-0.04	0.1042	0.05	-0.23	0.0000	0.24	-0.03	0.2529	0.03
Excited	-0.01	0.3761	0.01	-0.21	0.0000	0.24	-0.01	0.3696	0.01
Interested	0.10	0.0082	0.10	-0.04	0.1386	0.04	0.00	0.4604	0.00
(Bored)	0.19	0.0000	0.22	0.30	0.0000	0.35	0.07	0.0570	0.08

flow than comparators. For Twitter, results are slightly mixed. Compared to in-person interactions only, browsing Twitter appears to be characterized by less excitement and enthusiasm, and compared to all other ESFs as well as in-person interactions, browsing Twitter is also characterized by greater boredom. However, compared to all other ESFs, people appear to experience greater interest, and there are no differences in flow experience compared to other device uses. That said, considering that browsing Twitter, like browsing Facebook, is characterized overall by lower arousal and perhaps greater negativity, it seems browsing Twitter is also less conducive to flow overall.

Differences with respect to envy are intriguing but small in the two cases where they are significant. Results suggest that the emotional experience of browsing Facebook may be characterized by slightly higher envy compared to in-person social interactions ($p < .05$). Browsing Facebook is also characterized by marginally greater envy compared to all other ESFs ($p = .08$), but there is no difference compared to other device uses for the Facebook sample. If browsing Facebook is envy-inducing, Twitter may be envy *relieving*. Results suggest browsing Twitter may be accompanied by a small reduction in envy compared to other device uses ($p < .01$). The reduction is marginal compared to all other ESFs ($p = .05$) and there is no difference compared to in-person social interactions. Of course, the “other device uses” from which Twitter may provide envy relief can include Facebook. Appendices A-C list the full results.

5.5 Emotional Contagion?

Notably, results for the browsing experience so far seem to provide little support for the theory of emotional contagion. Whereas prior research suggests arousal promotes information sharing [9, 10] – which implies the status updates people *browse* on Facebook and Twitter should be characterized by higher arousal – results in this study suggest browsing Facebook and Twitter is characterized by *lower* arousal, and robustly so. If browsing Facebook and Twitter consists largely

of browsing status updates in feeds and profiles, then results raise questions about the potency of emotional contagion.

To explore this further, I prepared an additional dataset that relates the status updates participants submitted and rated in the closing questionnaire to all non-browsing ESFs. If emotional contagion from status updates is a predominant dynamic in the social media browsing experience, we should find that the emotions that are *overrepresented* in status updates compared to non-browsing ESFs should also be overrepresented in browsing ESFs compared to non-browsing ESFs. Similarly, emotions that are *underrepresented* in status updates compared to non-browsing ESFs should also be underrepresented in browsing ESFs compared to non-browsing ESFs.

Note that the additional dataset is only intended to provide an exploratory comparison. To ensure SUFs and non-browsing ESFs in the dataset refer to a similar range of dates, I remove SUFs and ESFs such that they share common start and end dates for each participant, resulting in SUF-ESF date ranges that span 5 and 4 days for the median Facebook and Twitter participant, respectively. This dataset is then compared to the primary dataset discussed in this study for the emotional contagion analysis, which spans the full week of ESM. Thus, the dates of the two datasets are not exactly matching, but they separately provide better estimates of SUF-ESF (non-browsing) differences, and browsing and non-browsing ESF differences¹⁹.

In the new dataset comparing status updates and non-browsing experiences, Facebook posts are more positive on the bipolar positive-negative item, and less deactivated on the core affect deactivated scale ($ps < .001$), while tweets are more negative on the bipolar positive-negative item and more negative, more activated and less deactivated on the respective core affect scales ($ps < .01$)²⁰. Appendix D shows the full results. Already, results suggest limited potency for emotional contagion. While Facebook posts appear to be higher in positivity and higher in arousal, the Facebook browsing experience is slightly lower in positivity and lower in arousal. Similarly, though both tweets and the Twitter browsing experience appear to tilt negative, tweets are higher in arousal while the Twitter browsing experience is lower in arousal.

Exploring the top five differences between SUFs and non-browsing ESFs, we also see in two-tailed t-tests that Facebook posts are more amused, in awe and proud, and less tired and sleepy ($ps < .0001$), while tweets are more amused, in awe, stirred up and surprised, and less tired ($ps < .0001$). As illustrated in Table 5, however, the emotional experiences of browsing Facebook and Twitter are characterized by *none* of these top five differences for status updates²¹.

Compared to all other ESFs, browsing Facebook is not characterized by greater amusement, awe or pride, or less tiredness or sleepiness. To the contrary, evidence suggests browsing Facebook may be characterized by *less* pride and *more* tiredness and sleepiness. Similarly, the Twitter browsing experience does not appear to be characterized by greater amusement, awe, surprise or feeling more stirred up or less tired than all other ESFs. Instead, people may feel more tired while browsing Twitter. Even anger, which is significantly overrepresented in both

¹⁹ Sample sizes are also curtailed slightly in the additional dataset, at 341 and 348 for the Facebook and Twitter samples, respectively. In these samples, the median Facebook participant has 14 ESFs and 5 SUFs, while the median Twitter participant has 10 ESFs and 9 SUFs. In addition, SUFs represent the emotions participants *themselves* broadcast in status updates, rather than what they receive in the status updates others broadcast. The assumption is that the emotions participants broadcast, on average, generalize to those they receive. This seems to be a workable assumption, but one that may be affected, for example, by algorithms that influence the posts people see in their social media feeds, and the extent to which they have elected to receive content from organizations and other entities excluded from this study.

²⁰ T-tests are two-tailed.

²¹ T-tests here are one-tailed because expectations, based on results for status updates, are directional.

Table 5. The social media browsing experience compared to other listed contexts for the top five overrepresented or (underrepresented) emotions in Facebook posts and tweets.

Emotional contagion hypothesis: Facebook									
	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>
Amused	0.04	0.1102	0.05	-0.12	0.0005	0.14	0.05	0.1341	0.05
(Tired)	0.12	0.0042	0.13	0.20	0.0000	0.22	0.18	0.0001	0.18
In Awe	-0.01	0.3861	0.01	-0.06	0.0138	0.08	0.02	0.2581	0.03
Proud	-0.07	0.0242	0.07	-0.18	0.0000	0.18	-0.05	0.1181	0.05
(Sleepy)	0.10	0.0118	0.11	0.24	0.0000	0.27	0.14	0.0018	0.15

Emotional contagion hypothesis: Twitter									
	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>	Diff	<i>p</i>	<i>d</i>
Amused	0.03	0.2049	0.04	-0.15	0.0003	0.17	0.00	0.4622	0.01
Stirred Up	0.02	0.2812	0.03	-0.05	0.1092	0.06	-0.01	0.4111	0.01
(Tired)	0.12	0.0049	0.12	0.26	0.0000	0.26	0.13	0.0044	0.13
In Awe	-0.02	0.2558	0.03	-0.07	0.0197	0.09	-0.02	0.2628	0.03
Surprised	-0.01	0.3109	0.02	-0.04	0.0737	0.06	-0.02	0.3219	0.02

Facebook posts and tweets (see Appendix D), is not significantly overrepresented in the experience of browsing either service (see Appendix A). A notable exception supporting the theory of emotional contagion in the Twitter sample, however, is disgust, which is overrepresented in tweets and the Twitter browsing experience.

Expanding our exploration to sample mean differences across all 36 unipolar emotion items, there actually appears to be, for the Facebook sample, a *negative* correlation between how over- or underrepresented an emotion is in status updates and how over- or underrepresented it is in the Facebook browsing experience, at $-.41$. For Twitter, the correlation is $-.13$. Thus, while we browse social media, this exploratory analysis suggests we are, in general, *no more likely* to experience the emotions people are *more likely* to express in their status updates — and may even be *less likely* to experience them.

These results, while suggestive, are nonetheless striking and they raise questions about the potency of emotional contagion. For Facebook, they may even suggest an opposite, like-causes-*unlike* pattern. If, for example, Facebook posts and tweets are indeed more excited, awed, proud and surprised, and less sleepy and tired, it is notable we do not feel more excited, awed, proud or surprised while browsing — but, rather, more sleepy and tired (see Appendices A and D).

6 DISCUSSION

6.1 Findings for Arousal and Valence

Stepping back from detailed analyses, what have we learned? Perhaps the most unexpected finding of this study is also its most robust — that, contrary to stereotype, people tend to wind down and experience *lower* arousal while they browse social media, not wind up. Though small in most cases, we find the effect for both Facebook and Twitter using two separate arousal scales across three comparator contexts: all other emotional experiences, social interactions with others

in person, and all other device uses. When exploring sample means, we also find that the experience of browsing social media is similar to the comparator contexts overall, and is characterized primarily by calm, relaxation and other positive, deactivated emotions.

On average, the emotional experience of browsing Facebook and Twitter also appears to be slightly more negative than emotional experience as a whole. Browsing Facebook is more negative according to the bipolar positive-negative item, while browsing Twitter is more negative according to the core affect negative scale. Along these lines, exploring individual items suggests we are more lonely, sad and bored while browsing Facebook and more lonely, depressed and bored (and disgusted) while browsing Twitter. These differences for negative items are accentuated compared to in-person social interactions, but they disappear compared to other device uses, except for depression and disgust for Twitter, where they are still elevated.

6.2 Findings for Envy and Flow Experience

With regard to the prediction of higher envy while browsing Facebook and Twitter, I find envy is somewhat elevated while we browse Facebook, but somewhat relieved while we browse Twitter. Envy is marginally higher for Facebook compared to all other emotional experiences, and significantly higher compared to interactions with others in person. For Twitter, envy is marginally lower compared to all other emotional experiences, and significantly lower compared to other device uses.

I also predicted that browsing social media would be characterized by greater flow experience, comprising higher enthusiasm, excitement and interest, and lower boredom. Across items, the hypothesis is not supported except in the narrow case of interest for Twitter, where it is higher compared to all other emotional experiences. In some cases, especially for Facebook, I find the reverse of the hypothesis, implying flow may actually *diminish* while we browse.

6.3 Exploratory Findings for Emotional Contagion

This lack of support for the flow hypothesis, as well as evidence that arousal is *lower* while we browse Facebook and Twitter, casts doubt on the potency of emotional contagion. While evidence for Facebook posts and tweets suggests they exhibit higher arousal, on average, the browsing experience is characterized by lower arousal, which is counter to the *like-causes-like* pattern of emotional contagion. Facebook posts also tend to be relatively positive, while the emotional experience of browsing Facebook leans negative. Across emotion items, in fact, exploratory analysis suggests that the emotions that are overrepresented in tweets tend *not* to be overrepresented in the Twitter browsing experience, while emotions that are overrepresented in Facebook posts actually tend to be *underrepresented* in the Facebook browsing experience. This finding is based on an association, for the two samples, of (1) average differences between status updates and non-browsing emotional experiences and (2) average differences between browsing and non-browsing emotional experiences.

6.4 Theoretical Implications

An important conflict that motivated this study centers, thus, on the emotional experience of browsing social media, with one line of research suggesting we feel envious in response to the overly-positive self-portrayals of others, another line of research suggesting the positivity (and negativity) of status updates is contagious in the viewer, and other research and popular depictions suggesting, for example, that we feel bad when we browse social media because we

perceive it as a meaningless activity, experience flow for opposite reasons, or whip ourselves into a frenzy of perpetual outrage. Ultimately, *none* of these perspectives captures what appears to be the primary effect of browsing social media, which is deactivation.

In this way, browsing social media is less “social” and more “media.” While we tend to be more activated in social interactions, previous research suggests we often use media to facilitate recovery, detachment from work and unwinding – in other words, to deactivate [42, p. 131; 63]. Indeed, the largest differences in the study result from comparisons of browsing with in-person social interactions. Future research might, therefore, endeavor to understand browsing social media as a form of media consumption, exploring the ways it may be similar or different in emotional profile to other forms of media consumption. In addition, evidence in this study that browsing social media is relatively similar to other device uses also suggests the desirability of a more systematic emotional comparison of the various ways we use our various devices.

A further theoretical implication of this work relates to the finding of inconsistent and uneven negative effects of browsing social media. On the one hand, this lack of robustness provides something of a null finding, or a counter to claims that browsing social media is clearly harmful. In this way, it aligns with other work showing uneven negative effects, like that of Moira Burke [13, 15, 17]. On the other hand, of the positive and negative effects we do observe, most are negative, suggesting that theories about possible negative effects of browsing social media cannot be easily dismissed. Exploring individual emotion items suggests, for example, that browsing Facebook and Twitter is associated with elevation of loneliness and either sadness or depression compared to all other emotional experiences. Perhaps we experience a kind of wallflower effect when we view the sociality of others in social media, where seeing others socialize, possibly while we are alone, draws attention to that aloneness and makes us feel as though we are on the outside looking in. Alternatively, perhaps deactivated negativity is the result of a feeling of inferiority associated with envy and social comparison on Facebook, or is a response to negative content we view while browsing, especially on Twitter. For the most part, however, these negative effects disappear in comparison with other device uses, suggesting browsing social media is not especially unique compared to other device uses.

Because evidence for tweets suggests they tend to be more negative than emotional life, it is possible that some of the negative emotional effect of browsing Twitter may be due to emotional contagion. On an exploratory basis, although tweets do not appear to be significantly more depressed or lonely, they do appear to be more disgusted and dissatisfied, both of which are reflected in the emotional experience of browsing Twitter. Overall, however, evidence does not suggest emotional contagion is especially potent in the Twitter browsing experience. For Facebook, exploratory evidence suggests the emotions in posts may even generally result in the *opposite* emotions in the viewer.

Results for envy are one possible case of this opposite, *like-causes-unlike* pattern. Envy – a negative emotion – may be elevated when people browse Facebook because Facebook posts lean *positive*, thus inducing more unfavorable social comparisons in the viewer. Similarly, envy may be relieved when people browse Twitter because tweets lean *negative*, thus inducing more favorable social comparisons. The results of this study thus cast doubt on the incredulity of Kramer et al. in the Facebook experiment that positive posts on Facebook could “somehow” affect us negatively [47, p. 8790]. Indeed, such an inversion seems more likely in light of this study and prior work, though further research is needed to address the limitations of this work and to deepen our understanding of the mechanisms involved in the effects we observe.

6.5 Additional Limitations

It is worth mentioning some further limitations of this research, beyond those discussed in Section 4. First, habituation with regard to emotion items in the experience sampling form may be a source of bias in results. If people habituate to a pattern of responding across contexts, this might reduce estimates of the size of differences between browsing and comparator contexts in results. Of course, we do still see significant differences between browsing and comparator contexts, however²². Second, despite the study's confidentiality and computer-based administration, results may reflect some amount of socially-desirable responding if participants internalize social proscriptions against emotions like envy. We do still see envy effects in this study, however, though they are small and uneven. With regard to envy, there is also risk that people misclassify envy as jealousy [73], which may also bias effect size estimates downward. Future research might experiment with items that may be clearer, such as feeling "inferior."

A third potential limitation with regard to the emotional experience of browsing social media relates to the broad definition of "browsing," which includes browsing feeds of status updates (News Feed, the Twitter feed, profiles, search results and so on), as intended, but may also include experiences where status updates are not present or are deemphasized. This is less of a concern for Twitter, which is relatively streamlined, but is more of a concern for Facebook, which has a broader range of content to browse, including group discussions and events. While the default and likely predominant source of browsing for both services is still feeds of status updates, the opportunity to browse other sources of content on Facebook, in particular, may dilute the emotional effects of the status updates people broadcast, including effects related to envy and emotional contagion. In future work, researchers might include additional response options on the experience sampling form for the other types of content people may browse in order to better distinguish the emotional experience of browsing status updates specifically.

A fourth limitation of this study is simply the fact that Facebook and Twitter continue to evolve as services. Though status updates seem likely to remain a core interaction for the two services for the foreseeable future given the durability they have already shown, both Facebook and Twitter continue to change in ways that could alter the contours of emotional experience on the two services²³. Change, however, also presents new opportunities for research.

A final limitation of this study relates, of course, to the observational nature of the data. Because experience sampling is observational, we cannot say that browsing social media *causes* deactivation, loneliness, envy or other effects. Instead, we can only observe that people experience these emotions *while* browsing, whether because browsing causes the emotions, because the emotions that precede browsing are not dissipated by it, or because something else situationally associated with browsing causes the emotions. In relation to individual effects, one explanation may be more likely than the others, or perhaps multiple explanations are interesting. For example, it seems unlikely that envy precedes browsing Facebook rather than follows as a result of browsing Facebook, and it also seems unlikely that something else situationally associated with browsing Facebook causes the envy. In this case, the content of Facebook may be the most likely cause of the envy we observe.

²² Most effect sizes in this study are small relative to the response scale and in terms of Cohen's *d*. Other studies of social media that employ experience sampling similarly find small emotional effects [e.g. 50, 82], though it is not the case that experience sampling and closely related methods find only small effects [e.g. 22; 42, p. 128; 45].

²³ See <https://newsroom.fb.com/news/2017/12/hard-questions-is-spending-time-on-social-media-bad-for-us/> and https://blog.twitter.com/official/en_us/a/2016/progress-on-addressing-online-abuse.html, for example.

With regard to deactivation, all three possible explanations seem plausible and interesting. People may turn to social media for whatever reason and find that it causes them to feel more deactivated (e.g. more bored or sleepy). People may also turn to social media to *alleviate* the boredom or sleepiness they already feel, though results suggest this may not be effective. There may also be something situationally associated with browsing social media that causes deactivation. For example, people might enjoy reclining while they browse, or they might otherwise use social media *to* deactivate, which suggests a combination of a causal effect of browsing social media with a causal effect of things, like reclining, that accompany a deliberate effort to wind down. Because the experience sampling form asks participants to write a few words about their current activity and whereabouts, I may be able to investigate the situational associations of deactivated or other browsing experiences in future analyses.

In spite of the observational nature of the data, if the emotions people broadcast in status updates are comparable to the emotions they view while browsing, results continue to suggest little potency for emotional contagion, on average. If the emotional experience of browsing social media is *caused* primarily by the emotions we view while browsing, results mostly disconfirm emotional contagion, as the activation of status updates causes deactivation, and the positivity of Facebook posts causes negativity. If the emotional experience of browsing social media is caused primarily by the emotions that precede browsing, then results suggest little *potency* for emotional contagion, as the phenomenon does not appear to overcome these emotions while people are browsing. If something else situationally associated with browsing social media, like reclining, causes the emotional experience of browsing, then results again suggest little potency for emotional contagion, as they do not overcome the effect of reclining.

7 CONCLUSION

In conclusion, researchers have focused a great deal of attention on the emotional effects of browsing social media, with many emphasizing possible negative effects and others suggesting the positive emotions in status updates are contagious. However, very few studies have investigated the actual emotional experience of browsing social media in the moment, and none with more than a few emotions. In an effort to address this gap, I conduct experience sampling with large and diverse samples of Facebook and Twitter users, assessing the browsing experience across a wide range of emotions and comparing it to day-to-day emotional experience as a whole, in-person social interactions, and other device uses. Surprisingly, results provide little evidence of robust positive or negative effects across comparators, suggesting instead that the primary effect of browsing social media is a lessening of arousal.

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A COMPARISON OF BROWSING AND ALL OTHER EXPERIENCES

Emotion	Facebook						Twitter													
	<i>M</i>		<i>SD</i>		<i>Diff</i>	<i>df</i>	<i>p</i>				<i>M</i>		<i>SD</i>		<i>M</i>		<i>SD</i>		<i>p</i>	
	Bro	Bro	Oth	Oth			<i>t</i>	2-Tail	<i>d</i>	Bro	Bro	Oth	Oth	Diff	<i>df</i>	<i>t</i>	2-Tail	<i>d</i>		
Active	2.28	0.99	2.56	0.77	-0.29	361	-6.41	0.0000	0.32	2.04	0.94	2.36	0.72	-0.33	415	-8.05	0.0000	0.39		
Afraid	1.29	0.63	1.31	0.52	-0.02	361	-0.84	0.4034	0.03	1.47	0.81	1.42	0.62	0.05	415	1.70	0.0898	0.07		
Amused	1.93	0.92	1.89	0.71	0.04	361	1.23	0.2203	0.05	2.09	0.95	2.06	0.69	0.03	415	0.82	0.4099	0.04		
Angry	1.38	0.66	1.39	0.47	-0.01	361	-0.43	0.6681	0.02	1.59	0.81	1.54	0.54	0.05	415	1.36	0.1753	0.07		
Anxious	1.66	0.86	1.71	0.75	-0.05	361	-1.83	0.0686	0.06	1.90	1.00	1.89	0.81	0.01	415	0.15	0.8789	0.01		
Ashamed	1.28	0.57	1.26	0.47	0.02	361	1.01	0.3130	0.04	1.38	0.72	1.33	0.54	0.05	415	2.17	0.0308	0.09		
In Awe	1.46	0.74	1.46	0.59	-0.01	361	-0.29	0.7721	0.01	1.51	0.75	1.53	0.58	-0.02	415	-0.66	0.5117	0.03		
Bored	1.86	0.88	1.68	0.61	0.18	361	4.84	0.0000	0.24	1.98	1.00	1.79	0.68	0.19	415	4.64	0.0000	0.22		
Calm	3.11	1.05	3.08	0.84	0.03	361	0.83	0.4047	0.03	3.18	0.98	3.08	0.72	0.10	415	2.75	0.0061	0.12		
Depressed	1.45	0.75	1.41	0.58	0.04	361	1.64	0.1018	0.06	1.62	0.89	1.54	0.69	0.08	415	2.73	0.0065	0.10		
Disgusted	1.31	0.60	1.30	0.45	0.01	361	0.52	0.6024	0.02	1.60	0.91	1.49	0.60	0.12	415	3.16	0.0017	0.16		
Dissatisfied	1.60	0.82	1.57	0.60	0.03	361	0.85	0.3981	0.04	1.92	1.00	1.82	0.77	0.10	415	2.37	0.0183	0.11		
At Ease	2.91	1.05	2.87	0.84	0.04	361	1.22	0.2223	0.05	3.03	1.01	2.95	0.74	0.08	415	2.04	0.0423	0.09		
Enthusiastic	2.07	0.98	2.15	0.81	-0.08	361	-2.42	0.0160	0.09	2.16	1.01	2.20	0.78	-0.04	415	-1.26	0.2083	0.05		
Envious	1.36	0.66	1.32	0.53	0.03	361	1.41	0.1603	0.06	1.36	0.70	1.40	0.62	-0.04	415	-1.64	0.1025	0.06		
Excited	1.95	0.95	2.05	0.76	-0.09	361	-2.73	0.0067	0.11	2.12	0.97	2.13	0.77	-0.01	415	-0.32	0.7522	0.01		
Happy	2.78	1.07	2.82	0.86	-0.05	361	-1.30	0.1941	0.05	2.79	1.00	2.82	0.78	-0.03	415	-0.78	0.4352	0.03		
Hostile	1.27	0.60	1.32	0.48	-0.04	361	-1.77	0.0779	0.08	1.42	0.70	1.40	0.51	0.02	415	0.77	0.4433	0.04		
Inspired	1.97	0.97	2.01	0.82	-0.05	361	-1.46	0.1451	0.05	2.00	0.97	2.05	0.77	-0.05	415	-1.45	0.1483	0.06		
Interested	2.56	1.00	2.57	0.79	-0.01	361	-0.14	0.8891	0.01	2.68	1.06	2.58	0.79	0.10	415	2.41	0.0165	0.10		
Lonely	1.58	0.88	1.51	0.69	0.07	361	2.28	0.0233	0.09	1.81	1.05	1.66	0.81	0.15	415	4.29	0.0000	0.16		
Loving	2.52	1.19	2.56	1.02	-0.04	361	-1.23	0.2183	0.04	2.53	1.14	2.54	0.93	-0.01	415	-0.26	0.7931	0.01		
Nervous	1.51	0.77	1.55	0.66	-0.04	361	-1.67	0.0957	0.06	1.64	0.86	1.66	0.69	-0.02	415	-0.62	0.5347	0.03		
Passive	2.24	1.02	2.11	0.81	0.13	361	3.76	0.0002	0.14	2.30	1.02	2.21	0.80	0.09	415	2.30	0.0217	0.10		
Peaceful	2.90	1.08	2.86	0.89	0.04	361	1.11	0.2692	0.04	2.92	0.98	2.91	0.79	0.01	415	0.36	0.7174	0.02		
Proud	2.04	1.01	2.10	0.84	-0.07	361	-1.98	0.0484	0.07	2.08	0.97	2.09	0.81	-0.01	415	-0.42	0.6754	0.02		
Relaxed	3.01	1.04	2.92	0.80	0.09	361	2.42	0.0160	0.10	3.10	0.99	3.01	0.72	0.09	415	2.12	0.0345	0.10		
Sad	1.51	0.74	1.45	0.54	0.06	361	2.01	0.0456	0.09	1.65	0.86	1.59	0.67	0.05	415	1.65	0.0989	0.07		
Satisfied	2.62	1.07	2.69	0.85	-0.06	361	-1.74	0.0826	0.07	2.61	0.95	2.63	0.75	-0.02	415	-0.52	0.6051	0.02		
Sick	1.33	0.61	1.34	0.51	-0.01	361	-0.37	0.7103	0.01	1.42	0.73	1.40	0.61	0.01	415	0.47	0.6418	0.02		
Sleepy	2.22	0.99	2.12	0.72	0.10	361	2.27	0.0236	0.11	2.41	1.09	2.26	0.77	0.15	415	3.37	0.0008	0.16		
Stirred Up	1.62	0.76	1.70	0.60	-0.08	361	-2.95	0.0034	0.12	1.94	0.96	1.91	0.69	0.02	415	0.58	0.5625	0.03		
Surprised	1.55	0.76	1.52	0.59	0.04	361	1.26	0.2095	0.06	1.55	0.73	1.56	0.61	-0.01	415	-0.49	0.6218	0.02		
Tired	2.32	1.06	2.20	0.73	0.12	361	2.65	0.0083	0.13	2.58	1.11	2.47	0.84	0.12	415	2.60	0.0098	0.12		
Unhappy	1.59	0.81	1.57	0.60	0.02	361	0.54	0.5893	0.02	1.80	0.92	1.80	0.76	0.00	415	0.01	0.9931	0.00		
Upset	1.55	0.78	1.54	0.54	0.01	361	0.36	0.7164	0.02	1.70	0.82	1.67	0.58	0.03	415	0.72	0.4707	0.04		
Pos-Neg	4.89	1.10	4.98	0.78	-0.09	361	-2.13	0.0342	0.10	4.74	1.08	4.80	0.78	-0.06	415	-1.24	0.2153	0.06		
Scale: Activ.	1.76	0.55	1.85	0.49	-0.09	361	-5.19	0.0000	0.17	1.86	0.56	1.92	0.50	-0.06	415	-3.09	0.0021	0.11		
Scale: Deact.	2.46	0.58	2.35	0.46	0.11	361	4.88	0.0000	0.21	2.59	0.58	2.47	0.45	0.12	415	5.36	0.0000	0.24		
Scale: Posit.	2.55	0.87	2.58	0.73	-0.03	361	-1.22	0.2251	0.04	2.60	0.78	2.60	0.65	0.00	415	-0.07	0.9435	0.00		
Scale: Negat.	1.50	0.65	1.48	0.52	0.02	361	1.04	0.2995	0.04	1.69	0.75	1.64	0.62	0.05	415	2.05	0.0408	0.07		

B COMPARISON OF BROWSING AND IN-PERSON SOCIAL INTERACTIONS

Emotion	Facebook								Twitter									
	<i>M</i>		<i>SD</i>		<i>Diff</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>	<i>M</i>		<i>SD</i>		<i>Diff</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
	Bro	Bro	Bro	Bro						Bro	Bro	Bro	Bro					
Active	2.28	0.98	2.68	0.89	-0.40	355	-8.37	0.0000	0.43	2.03	0.93	2.52	0.81	-0.49	397	-11.62	0.0000	0.56
Afraid	1.30	0.64	1.31	0.55	-0.01	355	-0.31	0.7579	0.01	1.45	0.79	1.39	0.62	0.06	397	2.14	0.0326	0.08
Amused	1.93	0.91	2.06	0.81	-0.12	355	-3.30	0.0011	0.14	2.09	0.95	2.24	0.81	-0.15	397	-3.42	0.0007	0.17
Angry	1.39	0.67	1.39	0.55	0.00	355	-0.12	0.9023	0.01	1.58	0.81	1.53	0.60	0.05	397	1.38	0.1694	0.07
Anxious	1.67	0.87	1.69	0.77	-0.02	355	-0.74	0.4626	0.03	1.87	0.97	1.87	0.86	0.00	397	0.02	0.9838	0.00
Ashamed	1.28	0.56	1.24	0.48	0.04	355	1.73	0.0840	0.07	1.37	0.71	1.30	0.54	0.07	397	2.48	0.0136	0.10
In Awe	1.46	0.74	1.52	0.69	-0.06	355	-2.21	0.0275	0.08	1.52	0.75	1.59	0.66	-0.07	397	-2.07	0.0394	0.09
Bored	1.86	0.87	1.58	0.62	0.28	355	7.46	0.0000	0.38	1.95	0.98	1.66	0.67	0.30	397	7.46	0.0000	0.35
Calm	3.11	1.05	3.09	0.85	0.02	355	0.50	0.6190	0.02	3.17	0.98	3.05	0.79	0.11	397	2.92	0.0037	0.13
Depressed	1.46	0.76	1.37	0.58	0.09	355	3.25	0.0013	0.13	1.60	0.88	1.46	0.66	0.14	397	4.53	0.0000	0.18
Disgusted	1.31	0.60	1.31	0.50	0.00	355	-0.14	0.8916	0.01	1.60	0.90	1.50	0.67	0.10	397	2.77	0.0058	0.13
Dissatisfied	1.60	0.81	1.54	0.62	0.06	355	1.60	0.1104	0.08	1.90	0.98	1.75	0.78	0.15	397	3.57	0.0004	0.17
At Ease	2.92	1.05	2.91	0.89	0.01	355	0.29	0.7731	0.01	3.03	1.01	3.02	0.81	0.00	397	0.06	0.9549	0.00
Enthusiastic	2.07	0.97	2.30	0.90	-0.23	355	-6.57	0.0000	0.24	2.15	1.00	2.38	0.89	-0.23	397	-5.74	0.0000	0.24
Envious	1.36	0.67	1.32	0.56	0.04	355	1.71	0.0890	0.06	1.36	0.69	1.38	0.60	-0.03	397	-1.09	0.2746	0.04
Excited	1.96	0.95	2.19	0.84	-0.23	355	-6.47	0.0000	0.25	2.13	0.97	2.34	0.84	-0.21	397	-5.86	0.0000	0.24
Happy	2.78	1.06	2.97	0.90	-0.19	355	-4.89	0.0000	0.19	2.79	0.99	3.03	0.83	-0.24	397	-6.09	0.0000	0.26
Hostile	1.28	0.61	1.32	0.52	-0.04	355	-1.80	0.0735	0.08	1.42	0.71	1.43	0.59	0.00	397	-0.16	0.8695	0.01
Inspired	1.97	0.96	2.08	0.90	-0.11	355	-3.16	0.0017	0.12	2.01	0.97	2.11	0.84	-0.11	397	-2.88	0.0042	0.12
Interested	2.57	0.99	2.71	0.89	-0.14	355	-3.47	0.0006	0.15	2.67	1.05	2.71	0.86	-0.04	397	-1.09	0.2772	0.04
Lonely	1.58	0.88	1.39	0.64	0.19	355	5.71	0.0000	0.25	1.78	1.04	1.55	0.77	0.24	397	6.25	0.0000	0.26
Loving	2.52	1.19	2.76	1.07	-0.24	355	-5.81	0.0000	0.21	2.55	1.15	2.81	1.01	-0.26	397	-6.34	0.0000	0.24
Nervous	1.52	0.78	1.55	0.68	-0.03	355	-0.98	0.3282	0.04	1.64	0.85	1.64	0.69	-0.01	397	-0.26	0.7935	0.01
Passive	2.24	1.02	2.05	0.85	0.19	355	5.08	0.0000	0.20	2.28	1.01	2.10	0.83	0.18	397	4.59	0.0000	0.20
Peaceful	2.90	1.08	2.91	0.92	-0.01	355	-0.24	0.8141	0.01	2.92	0.98	2.95	0.83	-0.03	397	-0.80	0.4269	0.03
Proud	2.04	1.01	2.22	0.93	-0.18	355	-4.98	0.0000	0.18	2.08	0.97	2.20	0.87	-0.12	397	-3.49	0.0005	0.13
Relaxed	3.01	1.05	2.94	0.88	0.07	355	1.66	0.0977	0.07	3.10	0.98	3.03	0.79	0.07	397	1.74	0.0819	0.08
Sad	1.50	0.73	1.42	0.57	0.09	355	2.83	0.0049	0.13	1.63	0.85	1.53	0.67	0.10	397	2.95	0.0033	0.14
Satisfied	2.63	1.07	2.80	0.92	-0.17	355	-4.11	0.0000	0.17	2.61	0.94	2.77	0.82	-0.16	397	-4.26	0.0000	0.18
Sick	1.33	0.61	1.32	0.52	0.00	355	0.19	0.8471	0.01	1.42	0.74	1.36	0.57	0.06	397	2.27	0.0239	0.09
Sleepy	2.21	0.97	1.97	0.79	0.24	355	5.82	0.0000	0.27	2.41	1.08	2.09	0.80	0.32	397	7.61	0.0000	0.34
Stirred Up	1.63	0.76	1.76	0.70	-0.14	355	-4.55	0.0000	0.19	1.94	0.95	1.99	0.78	-0.05	397	-1.23	0.2185	0.06
Surprised	1.56	0.77	1.58	0.70	-0.02	355	-0.53	0.5967	0.03	1.56	0.76	1.60	0.68	-0.04	397	-1.45	0.1474	0.06
Tired	2.31	1.05	2.11	0.81	0.20	355	4.38	0.0000	0.22	2.59	1.11	2.33	0.90	0.26	397	5.69	0.0000	0.26
Unhappy	1.59	0.81	1.53	0.61	0.06	355	1.74	0.0826	0.09	1.78	0.90	1.70	0.73	0.08	397	2.20	0.0286	0.09
Upset	1.56	0.79	1.54	0.59	0.02	355	0.57	0.5684	0.03	1.69	0.81	1.66	0.63	0.03	397	0.95	0.3435	0.05
Pos-Neg	4.89	1.11	5.13	0.87	-0.24	355	-4.95	0.0000	0.24	4.76	1.08	5.03	0.87	-0.27	397	-5.66	0.0000	0.27
Scale: Activ.	1.77	0.55	1.91	0.52	-0.14	355	-7.69	0.0000	0.26	1.86	0.57	1.99	0.52	-0.13	397	-7.26	0.0000	0.25
Scale: Deact.	2.46	0.58	2.29	0.47	0.17	355	7.51	0.0000	0.31	2.58	0.59	2.38	0.47	0.21	397	9.18	0.0000	0.39
Scale: Posit.	2.56	0.87	2.68	0.77	-0.13	355	-4.67	0.0000	0.15	2.60	0.77	2.73	0.68	-0.13	397	-4.59	0.0000	0.18
Scale: Negat.	1.50	0.66	1.45	0.52	0.05	355	2.15	0.0322	0.09	1.68	0.74	1.58	0.61	0.09	397	3.58	0.0004	0.14

C COMPARISON OF BROWSING AND ALL OTHER DEVICE USES

Emotion	Facebook						Twitter													
	<i>M</i>		<i>SD</i>		<i>Diff</i>	<i>df</i>	<i>t</i>	<i>p</i>	2-Tail	<i>d</i>	<i>M</i>		<i>SD</i>		<i>Diff</i>	<i>df</i>	<i>t</i>	<i>p</i>	2-Tail	<i>d</i>
	Bro	Dev	Bro	Dev							Bro	Dev	Bro	Dev						
Active	2.25	0.99	2.47	0.91	-0.22	346	-4.36	0.0000	0.23	2.03	0.92	2.22	0.82	-0.19	402	-4.39	0.0000	0.22		
Afraid	1.29	0.62	1.32	0.59	-0.03	346	-1.15	0.2514	0.06	1.47	0.80	1.45	0.69	0.02	402	0.62	0.5356	0.03		
Amused	1.92	0.91	1.87	0.83	0.05	346	1.11	0.2683	0.05	2.09	0.95	2.09	0.79	0.00	402	0.09	0.9244	0.01		
Angry	1.38	0.66	1.39	0.55	-0.02	346	-0.51	0.6107	0.03	1.58	0.81	1.55	0.67	0.04	402	0.94	0.3472	0.05		
Anxious	1.65	0.86	1.76	0.85	-0.11	346	-3.23	0.0013	0.13	1.88	0.97	1.92	0.90	-0.04	402	-1.02	0.3077	0.04		
Ashamed	1.28	0.56	1.27	0.53	0.01	346	0.42	0.6722	0.02	1.38	0.72	1.33	0.62	0.05	402	1.89	0.0597	0.08		
In Awe	1.44	0.72	1.42	0.61	0.02	346	0.65	0.5162	0.03	1.52	0.75	1.54	0.70	-0.02	402	-0.64	0.5257	0.03		
Bored	1.86	0.88	1.79	0.73	0.07	346	1.52	0.1287	0.08	1.96	0.99	1.89	0.84	0.07	402	1.58	0.1141	0.08		
Calm	3.11	1.05	3.08	0.96	0.02	346	0.57	0.5681	0.02	3.18	0.98	3.09	0.83	0.08	402	1.86	0.0641	0.09		
Depressed	1.45	0.75	1.43	0.64	0.02	346	0.72	0.4737	0.03	1.62	0.89	1.56	0.73	0.07	402	2.25	0.0252	0.08		
Disgusted	1.30	0.59	1.28	0.54	0.02	346	0.52	0.6015	0.03	1.60	0.90	1.49	0.70	0.11	402	2.81	0.0052	0.14		
Dissatisfied	1.60	0.81	1.61	0.74	-0.01	346	-0.25	0.8000	0.01	1.92	0.99	1.85	0.85	0.07	402	1.47	0.1417	0.07		
At Ease	2.91	1.05	2.91	0.96	0.01	346	0.18	0.8596	0.01	3.03	1.00	2.93	0.81	0.10	402	2.09	0.0377	0.11		
Enthusiastic	2.05	0.97	2.12	0.87	-0.07	346	-1.80	0.0722	0.08	2.16	0.99	2.18	0.84	-0.03	402	-0.67	0.5058	0.03		
Envious	1.34	0.64	1.32	0.54	0.01	346	0.50	0.6186	0.02	1.36	0.69	1.44	0.69	-0.08	402	-2.70	0.0073	0.11		
Excited	1.93	0.94	2.00	0.81	-0.07	346	-1.74	0.0833	0.08	2.10	0.94	2.11	0.83	-0.01	402	-0.33	0.7392	0.01		
Happy	2.77	1.07	2.80	0.95	-0.03	346	-0.68	0.4948	0.03	2.78	0.99	2.81	0.81	-0.04	402	-0.89	0.3726	0.04		
Hostile	1.27	0.60	1.31	0.56	-0.04	346	-1.47	0.1438	0.07	1.42	0.70	1.41	0.64	0.00	402	0.13	0.8936	0.01		
Inspired	1.94	0.95	1.98	0.89	-0.04	346	-1.12	0.2623	0.05	2.00	0.95	2.08	0.84	-0.09	402	-2.06	0.0399	0.10		
Interested	2.54	1.00	2.64	0.93	-0.09	346	-2.19	0.0295	0.10	2.68	1.06	2.68	0.89	0.00	402	-0.10	0.9209	0.00		
Lonely	1.58	0.88	1.56	0.77	0.01	346	0.35	0.7299	0.01	1.80	1.05	1.75	0.92	0.05	402	1.25	0.2125	0.05		
Loving	2.49	1.18	2.45	1.07	0.04	346	0.80	0.4261	0.03	2.53	1.13	2.45	1.00	0.08	402	1.94	0.0526	0.08		
Nervous	1.50	0.78	1.60	0.77	-0.10	346	-2.82	0.0051	0.13	1.63	0.85	1.68	0.76	-0.05	402	-1.31	0.1897	0.06		
Passive	2.23	1.02	2.13	0.87	0.10	346	2.68	0.0078	0.11	2.29	1.01	2.22	0.85	0.07	402	1.80	0.0731	0.08		
Peaceful	2.89	1.09	2.84	1.00	0.05	346	1.28	0.2002	0.05	2.92	0.97	2.90	0.87	0.01	402	0.31	0.7594	0.01		
Proud	2.02	1.00	2.07	0.91	-0.05	346	-1.19	0.2361	0.05	2.07	0.96	2.12	0.87	-0.05	402	-1.29	0.1961	0.05		
Relaxed	3.00	1.05	2.93	0.95	0.07	346	1.51	0.1307	0.07	3.10	0.98	3.02	0.81	0.08	402	1.83	0.0675	0.09		
Sad	1.50	0.73	1.46	0.62	0.04	346	1.23	0.2213	0.06	1.65	0.86	1.62	0.74	0.02	402	0.67	0.5006	0.03		
Satisfied	2.61	1.07	2.68	0.95	-0.07	346	-1.56	0.1200	0.07	2.62	0.95	2.60	0.79	0.01	402	0.31	0.7575	0.01		
Sick	1.33	0.61	1.33	0.60	0.00	346	-0.14	0.8856	0.01	1.41	0.72	1.41	0.65	0.00	402	0.02	0.9826	0.00		
Sleepy	2.21	0.99	2.07	0.88	0.14	346	2.93	0.0037	0.15	2.40	1.08	2.25	0.90	0.15	402	3.26	0.0012	0.16		
Stirred Up	1.61	0.75	1.75	0.72	-0.13	346	-3.82	0.0002	0.18	1.94	0.96	1.95	0.84	-0.01	402	-0.22	0.8223	0.01		
Surprised	1.54	0.75	1.51	0.63	0.03	346	0.87	0.3828	0.04	1.55	0.74	1.56	0.72	-0.02	402	-0.46	0.6437	0.02		
Tired	2.31	1.06	2.13	0.89	0.18	346	3.77	0.0002	0.18	2.59	1.11	2.45	0.95	0.13	402	2.63	0.0088	0.13		
Unhappy	1.59	0.80	1.61	0.69	-0.02	346	-0.52	0.6051	0.03	1.80	0.92	1.83	0.85	-0.03	402	-0.93	0.3546	0.04		
Upset	1.55	0.79	1.56	0.67	-0.01	346	-0.20	0.8426	0.01	1.70	0.82	1.68	0.66	0.02	402	0.50	0.6162	0.03		
Pos-Neg	4.88	1.11	4.93	0.95	-0.05	346	-1.06	0.2914	0.05	4.74	1.07	4.77	0.86	-0.03	402	-0.64	0.5227	0.03		
Scale: Activ.	1.75	0.54	1.85	0.52	-0.10	346	-5.12	0.0000	0.19	1.85	0.56	1.91	0.55	-0.05	402	-2.67	0.0080	0.09		
Scale: Deact.	2.45	0.58	2.36	0.51	0.10	346	4.00	0.0001	0.18	2.59	0.58	2.49	0.52	0.10	402	3.97	0.0001	0.18		
Scale: Posit.	2.54	0.86	2.57	0.78	-0.03	346	-0.86	0.3897	0.03	2.59	0.77	2.59	0.66	0.00	402	0.06	0.9533	0.00		
Scale: Negat.	1.50	0.65	1.50	0.58	0.00	346	-0.04	0.9682	0.00	1.69	0.75	1.66	0.66	0.03	402	1.02	0.3094	0.04		

D COMPARISON OF STATUS UPDATES AND NON-BROWSING EXPERIENCES

Emotion	Facebook								Twitter									
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Diff	<i>df</i>	<i>t</i>	<i>p</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Diff	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>	
	SUF	SUF	ESF	ESF				2-Tail	<i>d</i>	SUF	SUF	ESF	ESF				2-Tail	<i>d</i>
Active	2.37	0.98	2.57	0.86	-0.20	340	-4.41	0.0000	0.22	2.10	0.90	2.30	0.79	-0.20	347	-4.69	0.0000	0.24
Afraid	1.24	0.55	1.31	0.54	-0.06	340	-2.49	0.0132	0.11	1.37	0.64	1.35	0.59	0.02	347	0.53	0.5952	0.03
Amused	2.39	0.99	1.92	0.77	0.47	340	8.95	0.0000	0.53	2.37	0.95	1.99	0.78	0.37	347	7.82	0.0000	0.43
Angry	1.43	0.65	1.36	0.52	0.07	340	2.05	0.0411	0.12	1.73	0.82	1.47	0.61	0.26	347	5.88	0.0000	0.36
Anxious	1.54	0.72	1.68	0.78	-0.13	340	-3.48	0.0006	0.18	1.76	0.82	1.84	0.84	-0.09	347	-2.33	0.0202	0.10
Ashamed	1.21	0.50	1.25	0.52	-0.04	340	-1.61	0.1089	0.08	1.29	0.53	1.31	0.54	-0.02	347	-0.50	0.6172	0.03
In Awe	1.90	0.87	1.47	0.66	0.42	340	10.48	0.0000	0.55	1.86	0.86	1.55	0.67	0.31	347	7.91	0.0000	0.41
Bored	1.47	0.69	1.65	0.61	-0.18	340	-5.73	0.0000	0.28	1.67	0.73	1.75	0.73	-0.07	347	-1.81	0.0704	0.10
Calm	2.87	1.00	3.08	0.89	-0.21	340	-5.08	0.0000	0.22	2.81	0.90	3.06	0.80	-0.26	347	-6.35	0.0000	0.31
Depressed	1.33	0.58	1.40	0.66	-0.07	340	-2.59	0.0101	0.11	1.54	0.82	1.51	0.74	0.03	347	1.05	0.2937	0.04
Disgusted	1.37	0.66	1.29	0.52	0.09	340	2.68	0.0077	0.15	1.66	0.82	1.43	0.65	0.22	347	5.37	0.0000	0.31
Dissatisfied	1.54	0.73	1.55	0.67	-0.01	340	-0.30	0.7672	0.02	1.88	0.87	1.75	0.81	0.13	347	2.81	0.0052	0.16
At Ease	2.72	1.04	2.93	0.90	-0.22	340	-5.45	0.0000	0.22	2.75	0.96	2.93	0.82	-0.18	347	-4.31	0.0000	0.20
Enthusiastic	2.44	1.06	2.18	0.88	0.26	340	5.31	0.0000	0.26	2.35	0.99	2.18	0.87	0.17	347	3.60	0.0004	0.18
Envious	1.28	0.58	1.32	0.57	-0.04	340	-1.62	0.1052	0.07	1.33	0.56	1.35	0.59	-0.02	347	-0.55	0.5795	0.03
Excited	2.37	1.07	2.07	0.85	0.30	340	6.43	0.0000	0.31	2.25	0.93	2.10	0.85	0.16	347	3.44	0.0006	0.18
Happy	2.95	1.11	2.85	0.94	0.10	340	2.12	0.0347	0.10	2.73	0.95	2.82	0.88	-0.08	347	-1.95	0.0518	0.09
Hostile	1.27	0.53	1.30	0.52	-0.03	340	-1.02	0.3103	0.05	1.52	0.70	1.34	0.51	0.18	347	4.93	0.0000	0.30
Inspired	2.27	0.99	2.03	0.87	0.24	340	5.50	0.0000	0.25	2.29	0.95	2.03	0.84	0.26	347	5.56	0.0000	0.29
Interested	2.77	1.05	2.56	0.89	0.21	340	4.73	0.0000	0.22	2.73	0.97	2.53	0.88	0.20	347	4.37	0.0000	0.21
Lonely	1.40	0.74	1.47	0.74	-0.07	340	-2.57	0.0105	0.10	1.56	0.86	1.63	0.86	-0.07	347	-2.00	0.0462	0.09
Loving	2.71	1.23	2.58	1.09	0.13	340	2.82	0.0051	0.12	2.32	1.01	2.50	0.97	-0.17	347	-3.83	0.0002	0.17
Nervous	1.40	0.62	1.52	0.70	-0.12	340	-3.61	0.0004	0.18	1.54	0.72	1.61	0.74	-0.08	347	-2.04	0.0424	0.10
Passive	1.83	0.88	2.14	0.89	-0.31	340	-8.49	0.0000	0.35	1.96	0.85	2.17	0.85	-0.21	347	-5.37	0.0000	0.24
Peaceful	2.74	1.08	2.89	0.95	-0.15	340	-3.91	0.0001	0.15	2.69	0.95	2.94	0.87	-0.24	347	-5.44	0.0000	0.27
Proud	2.52	1.08	2.12	0.92	0.40	340	7.60	0.0000	0.40	2.32	0.95	2.04	0.83	0.28	347	5.45	0.0000	0.31
Relaxed	2.77	1.03	2.95	0.85	-0.19	340	-4.25	0.0000	0.20	2.80	0.93	3.01	0.78	-0.22	347	-4.84	0.0000	0.25
Sad	1.45	0.67	1.43	0.60	0.02	340	0.68	0.4976	0.03	1.70	0.84	1.55	0.70	0.14	347	3.71	0.0002	0.18
Satisfied	2.71	1.08	2.74	0.92	-0.03	340	-0.74	0.4595	0.03	2.51	0.91	2.61	0.85	-0.11	347	-2.52	0.0121	0.12
Sick	1.24	0.54	1.35	0.58	-0.11	340	-3.88	0.0001	0.19	1.31	0.60	1.35	0.62	-0.04	347	-1.46	0.1448	0.06
Sleepy	1.67	0.79	2.06	0.77	-0.39	340	-9.60	0.0000	0.51	1.90	0.92	2.18	0.89	-0.28	347	-5.76	0.0000	0.31
Stirred Up	1.72	0.78	1.67	0.68	0.05	340	1.20	0.2305	0.06	2.22	0.97	1.87	0.78	0.35	347	7.63	0.0000	0.39
Surprised	1.74	0.80	1.51	0.65	0.23	340	5.72	0.0000	0.32	1.81	0.77	1.51	0.63	0.30	347	7.40	0.0000	0.42
Tired	1.75	0.84	2.16	0.82	-0.41	340	-9.82	0.0000	0.50	2.07	1.00	2.38	0.97	-0.31	347	-6.43	0.0000	0.32
Unhappy	1.52	0.69	1.54	0.67	-0.01	340	-0.36	0.7154	0.02	1.87	0.89	1.74	0.76	0.14	347	3.21	0.0015	0.17
Upset	1.54	0.69	1.51	0.62	0.03	340	0.88	0.3801	0.05	1.88	0.91	1.61	0.69	0.27	347	5.74	0.0000	0.33
Pos-Neg	5.25	1.17	5.03	0.89	0.22	340	3.64	0.0003	0.22	4.70	1.20	4.87	0.89	-0.17	347	-2.73	0.0066	0.16
Scale: Activ.	1.86	0.55	1.84	0.52	0.02	340	0.98	0.3283	0.04	1.94	0.55	1.87	0.52	0.07	347	3.06	0.0024	0.14
Scale: Deact.	2.06	0.53	2.34	0.49	-0.28	340	-12.64	0.0000	0.55	2.20	0.57	2.42	0.50	-0.22	347	-7.94	0.0000	0.42
Scale: Posit.	2.68	0.91	2.62	0.78	0.06	340	1.76	0.0787	0.07	2.56	0.79	2.59	0.70	-0.03	347	-0.82	0.4156	0.04
Scale: Negat.	1.44	0.56	1.45	0.58	-0.02	340	-0.62	0.5369	0.03	1.71	0.73	1.58	0.62	0.12	347	3.71	0.0002	0.18

REFERENCES

- [1] Emma K. Adam. 2005. Momentary emotion and cortisol levels in the everyday lives of working parents. In B. Schneider, & L. J. Waite (Eds.), *Being together, working apart: Dual-career families and the work-life balance*. Cambridge University Press, New York, NY, 105–133.
- [2] Lisa G. Aspinwall and Shelley E. Taylor. 1993. Effects of social comparison direction, threat, and self-esteem on affect, self-evaluation, and expected success. *Journal of Personality and Social Psychology* 64, 5: 708–722. <https://doi.org/10.1037/0022-3514.64.5.708>
- [3] Lars Backstrom. 2013. News Feed FYI: A window into News Feed. Retrieved from <https://www.facebook.com/business/news/News-Feed-FYI-A-Window-Into-News-Feed>
- [4] Lisa Feldman Barrett. 2009. Variety is the spice of life: A psychological construction approach to understanding variability in emotion. *Cognition & Emotion* 23, 7: 1284–1306. <https://doi.org/10.1080/02699930902985894>
- [5] Lisa Feldman Barrett, Eliza Bliss-Moreau, Seth L. Duncan, Scott L. Rauch, and Christopher I. Wright. 2007. The amygdala and the experience of affect. *Social Cognitive and Affective Neuroscience* 2, 2: 73–83. <https://doi.org/10.1093/scan/nsl042>
- [6] Lisa Feldman Barrett and Thyra Fossum. 2001. Mental representations of affect knowledge. *Cognition and Emotion* 15, 3: 333–363. <https://doi.org/10.1080/0269993004200196>
- [7] Lisa Feldman Barrett and Paula M. Niedenthal. 2004. Valence focus and the perception of facial affect. *Emotion* 4, 3: 266–274. <https://doi.org/10.1037/1528-3542.4.3.266>
- [8] Lisa Feldman Barrett and James A. Russell. 1998. Independence and bipolarity in the structure of current affect. *Journal of Personality and Social Psychology* 74, 4: 967–984. <https://doi.org/10.1037/0022-3514.74.4.967>
- [9] Jonah Berger. 2011. Arousal increases social transmission of information. *Psychological Science* 22, 7: 891–893. <https://doi.org/10.1177/0956797611413294>
- [10] Jonah Berger and Katherine L. Milkman. 2012. What makes online content viral? *Journal of Marketing Research* 49, 2: 192–205. <https://doi.org/10.1509/jmr.10.0353>
- [11] danah boyd. 2014. *It's complicated: the social lives of networked teens*. Yale University Press, New Haven, CT.
- [12] Jonathon D. Brown, Natalie J. Novick, Kelley A. Lord, and Jane M. Richards. 1992. When Gulliver travels: Social context, psychological closeness, and self-appraisals. *Journal of Personality and Social Psychology* 62, 5: 717–727. <https://doi.org/10.1037/0022-3514.62.5.717>
- [13] Moira Burke. 2011. Reading, writing, relationships: The impact of social network sites on relationships and well-being. Unpublished doctoral dissertation. Carnegie Mellon University, Pittsburgh, PA. Retrieved from <http://repository.cmu.edu/dissertations/185>
- [14] Moira Burke and Mike Develin. 2016. Once more with feeling: Supportive responses to social sharing on Facebook. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing - CSCW '16*, 1460–1472. <https://doi.org/10.1145/2818048.2835199>
- [15] Moira Burke and Robert Kraut. 2013. Using Facebook after losing a job: Differential benefits of strong and weak ties. In *Proceedings of the 2013 Conference on Computer-Supported Cooperative Work - CSCW '13*, 1419. <https://doi.org/10.1145/2441776.2441936>
- [16] Moira Burke and Robert E. Kraut. 2014. Growing closer on Facebook: Changes in tie strength through social network site use. In *Proceedings of the 32nd Annual ACM Conference on Human Factors in Computing Systems - CHI '14*, 4187–4196. <https://doi.org/10.1145/2556288.2557094>
- [17] Moira Burke and Robert E. Kraut. 2016. The relationship between Facebook use and well-being depends on communication type and tie strength. *Journal of Computer-Mediated Communication* 21, 4: 265–281. <https://doi.org/10.1111/jcc4.12162>
- [18] Moira Burke, Robert Kraut, and Cameron Marlow. 2011. Social capital on Facebook: Differentiating uses and users. In *Proceedings of the 2011 Annual Conference on Human Factors in Computing Systems - CHI '11*, 571. <https://doi.org/10.1145/1978942.1979023>
- [19] Thomas F. Cash, Diane Walker Cash, and Jonathan W. Butters. 1983. “Mirror, mirror, on the wall...?”: Contrast effects and self-evaluations of physical attractiveness. *Personality and Social Psychology Bulletin* 9, 3: 351–358. <https://doi.org/10.1177/0146167283093004>
- [20] Hui-Tzu Grace Chou and Nicholas Edge. 2012. “They are happier and having better lives than I am”: The impact of using Facebook on perceptions of others’ lives. *Cyberpsychology, Behavior, and Social Networking* 15, 2: 117–121. <https://doi.org/10.1089/cyber.2011.0324>
- [21] Tamlin Conner and Lisa Feldman Barrett. 2005. Implicit self-attitudes predict spontaneous affect in daily life. *Emotion* 5, 4: 476–488. <https://doi.org/10.1037/1528-3542.5.4.476>
- [22] Mihaly Csikszentmihalyi and Jeremy Hunter. 2003. Happiness in everyday life: The uses of experience sampling. *Journal of Happiness Studies* 4, 2: 185–199.
- [23] Mihaly Csikszentmihalyi and Reed Larson. 1987. Validity and reliability of the experience-sampling method. *The Journal of Nervous and Mental Disease* 175, 9: 526–536. <https://doi.org/10.1097/00005053-198709000-00004>
- [24] Jan-Emmanuel De Neve, Ed Diener, Louis Tay, and Cody Xuereb. 2013. The objective benefits of subjective well-being. In J. Helliwell, R. Layard, & J. Sachs (Eds.), *World happiness report*. Sustainable Development Solutions Network, New York, NY, 54–79.
- [25] Ed Diener, Robert A. Emmons, Randy J. Larsen, and Sharon Griffin. 1985. The satisfaction with life scale. *Journal of Personality Assessment* 49, 1: 71–75. https://doi.org/10.1207/s15327752jpa4901_13

- [26] Ed Diener, Satoshi Kanazawa, Eunkook M. Suh, and Shigehiro Oishi. 2015. Why people are in a generally good mood. *Personality and Social Psychology Review* 19, 3: 235–256. <https://doi.org/10.1177/1088868314544467>
- [27] Ed Diener, Shigehiro Oishi, and Richard Lucas. 2009. Subjective well-being: The science of happiness and life satisfaction. In S. J. Lopez & C. R. Snyder (Eds.), *Oxford handbook of positive psychology*. Oxford University Press, New York, NY, 185–194.
- [28] Thomas Dohmen, Armin Falk, Klaus Fliessbach, Uwe Sunde, and Bernd Weber. 2011. Relative versus absolute income, joy of winning, and gender: Brain imaging evidence. *Journal of Public Economics* 95, 3–4: 279–285. <https://doi.org/10.1016/j.jpubeco.2010.11.025>
- [29] William W. Eaton, Corey Smith, Michele Ybarra, Carles Muntaner, and Allen Tien. Center for Epidemiologic Studies Depression Scale: Review and revision (CESD and CESD-R). In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment* (3rd ed.). Lawrence Erlbaum, Mahwah, NJ, 363–377.
- [30] Amir Efrati. 2016. Facebook Struggles to Stop Decline in “Original” Sharing. *The Information*. Retrieved from <https://www.theinformation.com/facebook-struggles-to-stop-decline-in-original-sharing>
- [31] Panteleimon Ekkekakis. 2013. *The measurement of affect, mood, and emotion: A guide for health-behavioral research*. Cambridge University Press, Cambridge, UK; New York.
- [32] Paul Ekman. 1992. An argument for basic emotions. *Cognition and Emotion* 6, 3–4: 169–200. <https://doi.org/10.1080/02699939208411068>
- [33] Paul Ekman. 1999. Basic emotions. In T. Dalgleish & M. Power (Eds.), *Handbook of Cognition and Emotion*. John Wiley & Sons, Sussex, U.K., 45–60.
- [34] Sonja Entringer, Claudia Buss, Judith Andersen, Aleksandra Chic-DeMet, and Pathik D. Wadhwa. 2011. Ecological momentary assessment of maternal cortisol profiles over a multiple-day period predicts the length of human gestation. *Psychosomatic Medicine* 73, 6: 469–474. <https://doi.org/10.1097/PSY.0b013e31821fbf9a>
- [35] Leon Festinger. 1954. A theory of social comparison processes. *Human Relations* 7, 2: 117–140. <https://doi.org/10.1177/001872675400700202>
- [36] Jesse Fox and Jennifer J. Moreland. 2015. The dark side of social networking sites: An exploration of the relational and psychological stressors associated with Facebook use and affordances. *Computers in Human Behavior* 45: 168–176. <https://doi.org/10.1016/j.chb.2014.11.083>
- [37] Barbara L. Fredrickson. 2001. The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist* 56, 3: 218–226. <https://doi.org/10.1037/0003-066X.56.3.218>
- [38] David Ginsberg and Moira Burke. 2017. Hard questions: Is spending time on social media bad for us? Retrieved from <https://newsroom.fb.com/news/2017/12/hard-questions-is-spending-time-on-social-media-bad-for-us/>
- [39] Shannon Greenwood, Andrew Perrin, and Maeve Duggan. 2016. Social media update 2016: Facebook usage and engagement is on the rise, while adoption of other platforms holds steady. *Pew Research Center*. Retrieved from <http://www.pewinternet.org/2016/11/11/social-media-update-2016>
- [40] June Gruber, Iris B. Mauss, and Maya Tamir. 2011. A dark side of happiness? How, when, and why happiness is not always good. *Perspectives on Psychological Science* 6, 3: 222–233. <https://doi.org/10.1177/1745691611406927>
- [41] Michael R. Hagerty. 2000. Social comparisons of income in one’s community: Evidence from national surveys of income and happiness. *Journal of Personality and Social Psychology* 78, 4: 764–771. <https://doi.org/10.1037/0022-3514.78.4.764>
- [42] Joel M. Hektner, Jennifer A. Schmidt, and Mihaly Csikszentmihalyi. 2007. *Experience sampling method: measuring the quality of everyday life*. Sage Publications, Thousand Oaks, CA.
- [43] Christian Hinsch and Kennon M. Sheldon. 2013. The impact of frequent social Internet consumption: Increased procrastination and lower life satisfaction. *Journal of Consumer Behaviour* 12, 6: 496–505. <https://doi.org/10.1002/cb.1453>
- [44] Marlin C. Hoover. 1983. Individual differences in the relation of heart rate to self-reports. Unpublished doctoral dissertation. University of Chicago, Chicago, IL.
- [45] Daniel Kahneman and Alan B. Krueger. 2006. Developments in the measurement of subjective well-being. *Journal of Economic Perspectives* 20, 1: 3–24. <https://doi.org/10.1257/089533006776526030>
- [46] Daniel Kahneman, Alan B. Krueger, David A. Schkade, Norbert Schwarz, and Arthur A. Stone. 2004. A survey method for characterizing daily life experience: The Day Reconstruction Method. *Science* 306, 5702: 1776–1780. <https://doi.org/10.1126/science.1103572>
- [47] Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock. 2014. Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences* 111, 24: 8788–8790. <https://doi.org/10.1073/pnas.1320040111>
- [48] Hanna Krasnova, Helena Wenninger, Thomas Widjaja, and Peter Buxmann. 2013. Envy on Facebook: A hidden threat to users’ life satisfaction? In *Proceedings of the 11th International Conference on Wirtschaftsinformatik*.
- [49] Hanna Krasnova, Thomas Widjaja, Peter Buxmann, Helena Wenninger, and Izak Benbasat. 2015. Why following friends can hurt you: An exploratory investigation of the effects of envy on social networking sites among college-age users. *Information Systems Research* 26, 3: 585–605. <https://doi.org/10.1287/isre.2015.0588>
- [50] Ethan Kross, Philippe Verduyn, Emre Demiralp, Jiyoung Park, David Seungjae Lee, Natalie Lin, Holly Shaback, John Jonides, and Oscar Ybarra. 2013. Facebook use predicts declines in subjective well-being in young adults. *PLoS ONE* 8, 8: e69841. <https://doi.org/10.1371/journal.pone.0069841>
- [51] Richard J. Larsen and Ed Diener. 1992. Promises and problems with the circumplex model of emotion. In M. S. Clark (Ed.), *Review of personality and social psychology: Emotion*. Sage, Newbury Park, CA, 25–59.

- [52] Joseph E. LeDoux. 2014. Comment: What's basic about the brain mechanisms of emotion? *Emotion Review* 6, 4: 318–320. <https://doi.org/10.1177/1754073914534506>
- [53] Sang Yup Lee. 2014. How do people compare themselves with others on social network sites? The case of Facebook. *Computers in Human Behavior* 32: 253–260. <https://doi.org/10.1016/j.chb.2013.12.009>
- [54] Paul Lewis. 2017. "Our minds can be hijacked": The tech insiders who fear a smartphone dystopia. *The Guardian*. Retrieved from <https://www.theguardian.com/technology/2017/oct/05/smartphone-addiction-silicon-valley-dystopia>
- [55] Lilly F. Lin and James A. Kulik. 2002. Social comparison and women's body satisfaction. *Basic and Applied Social Psychology* 24, 2: 115–123. https://doi.org/10.1207/S15324834BASP2402_4
- [56] Sonja Lyubomirsky and Lee Ross. 1997. Hedonic consequences of social comparison: A contrast of happy and unhappy people. *Journal of Personality and Social Psychology* 73, 6: 1141–1157. <https://doi.org/10.1037/0022-3514.73.6.1141>
- [57] Maurizio Mauri, Pietro Cipresso, Anna Balgera, Marco Villamira, and Giuseppe Riva. 2011. Why is Facebook so successful? Psychophysiological measures describe a core flow state while using Facebook. *Cyberpsychology, Behavior, and Social Networking* 14, 12: 723–731. <https://doi.org/10.1089/cyber.2010.0377>
- [58] Dan P. McAdams and Carol A. Constantian. 1983. Intimacy and affiliation motives in daily living: An experience sampling analysis. *Journal of Personality and Social Psychology* 45, 4: 851–861. <https://doi.org/10.1037/0022-3514.45.4.851>
- [59] Matthias R. Mehl and Tamlin S. Conner (eds.). 2012. *Handbook of research methods for studying daily life*. Guilford Press, New York, NY.
- [60] Stan Morse and Kenneth J. Gergen. 1970. Social comparison, self-consistency, and the concept of self. *Journal of Personality and Social Psychology* 16, 1: 148–156. <https://doi.org/10.1037/h0029862>
- [61] Galen Panger. 2014. Social comparison in social media: A look at Facebook and Twitter. In *Proceedings of the Extended Abstracts of the 32nd Annual ACM Conference on Human Factors in Computing Systems - CHI EA '14*, 2095–2100. <https://doi.org/10.1145/2559206.2581184>
- [62] Galen Panger. 2016. Reassessing the Facebook experiment: Critical thinking about the validity of Big Data research. *Information, Communication & Society* 19, 8: 1108–1126. <https://doi.org/10.1080/1369118X.2015.1093525>
- [63] Leonard Reinecke and Wilhelm Hofmann. 2016. Slacking off or winding down? An experience sampling study on the drivers and consequences of media use for recovery versus procrastination. *Human Communication Research* 42, 3: 441–461. <https://doi.org/10.1111/hcre.12082>
- [64] Michael D. Robinson and Gerald L. Clore. 2002. Belief and feeling: Evidence for an accessibility model of emotional self-report. *Psychological Bulletin* 128, 6: 934–960. <https://doi.org/10.1037/0033-2909.128.6.934>
- [65] James A. Russell. 1980. A circumplex model of affect. *Journal of Personality and Social Psychology* 39, 6: 1161–1178. <https://doi.org/10.1037/h0077714>
- [66] James A. Russell. 2003. Core affect and the psychological construction of emotion. *Psychological Review* 110, 1: 145–172. <https://doi.org/10.1037/0033-295X.110.1.145>
- [67] James A. Russell. 2009. Emotion, core affect, and psychological construction. *Cognition & Emotion* 23, 7: 1259–1283. <https://doi.org/10.1080/02699930902809375>
- [68] John Sabini and Maury Silver. 2005. Ekman's basic emotions: Why not love and jealousy? *Cognition & Emotion* 19, 5: 693–712. <https://doi.org/10.1080/02699930441000481>
- [69] Christina Sagioglou and Tobias Greitemeyer. 2014. Facebook's emotional consequences: Why Facebook causes a decrease in mood and why people still use it. *Computers in Human Behavior* 35: 359–363. <https://doi.org/10.1016/j.chb.2014.03.003>
- [70] Peter Salovey and Judith Rodin. 1984. Some antecedents and consequences of social-comparison jealousy. *Journal of Personality and Social Psychology* 47, 4: 780–792. <https://doi.org/10.1037//0022-3514.47.4.780>
- [71] Lauren Scissors, Moira Burke, and Steven Wengrovitz. 2016. What's in a Like? Attitudes and behaviors around receiving Likes on Facebook. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing - CSCW '16*, 1499–1508. <https://doi.org/10.1145/2818048.2820066>
- [72] Christine N. Scollon, Ed Diener, Richard Lucas, Shigehiro Oishi, and Robert Biswas-Diener. 2001. Accentuate the positive: Exploring memory for emotions. Paper presented at the Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
- [73] Richard H. Smith and Sung Hee Kim. 2007. Comprehending envy. *Psychological Bulletin* 133, 1: 46–64. <https://doi.org/10.1037/0033-2909.133.1.46>
- [74] Joshua Smyth, Margit C Ockenfels, Laura Porter, Clemens Kirschbaum, Dirk H. Hellhammer, and Arthur A. Stone. 1998. Stressors and mood measured on a momentary basis are associated with salivary cortisol secretion. *Psychoneuroendocrinology* 23, 4: 353–370. [https://doi.org/10.1016/S0306-4530\(98\)00008-0](https://doi.org/10.1016/S0306-4530(98)00008-0)
- [75] Mieke Sonnenschein, Paula M. C. Mommersteeg, Jan H. Houtveen, Marjolijn J. Sorbi, Wilmar B. Schauffeli, and Lorenz J. P. van Doornen. 2007. Exhaustion and endocrine functioning in clinical burnout: An in-depth study using the experience sampling method. *Biological Psychology* 75, 2: 176–184. <https://doi.org/10.1016/j.biopsycho.2007.02.001>
- [76] Andrew Steptoe, E. Leigh Gibson, Mark Hamer, and Jane Wardle. 2007. Neuroendocrine and cardiovascular correlates of positive affect measured by ecological momentary assessment and by questionnaire. *Psychoneuroendocrinology* 32, 1: 56–64. <https://doi.org/10.1016/j.psyneuen.2006.10.001>
- [77] Edson C. Tandoc, Patrick Ferrucci, and Margaret Duffy. 2015. Facebook use, envy, and depression among college students: Is Facebooking depressing? *Computers in Human Behavior* 43: 139–146. <https://doi.org/10.1016/j.chb.2014.10.053>
- [78] Jessica L. Tracy. 2014. An evolutionary approach to understanding distinct emotions. *Emotion Review* 6, 4: 308–312. <https://doi.org/10.1177/1754073914534478>

- [79] Morten Tromholt. 2016. The Facebook experiment: Quitting Facebook leads to higher levels of well-being. *Cyberpsychology, Behavior, and Social Networking* 19, 11: 661–666. <https://doi.org/10.1089/cyber.2016.0259>
- [80] Marleen M. Van Eck and Nancy A. Nicolson. 1994. Perceived stress and salivary cortisol in daily life. *Annals of Behavioral Medicine* 16, 3: 221–227.
- [81] Lawrence F. Van Egeren and Suthep Madarasmi. 1992. Blood pressure and behavior: Mood, activity and blood pressure in daily life. In M. W. de Vries (Ed.), *The experience of psychopathology: Investigating mental disorders in their natural settings*. 240–254.
- [82] Philippe Verduyn, David Seungjae Lee, Jiyoung Park, Holly Shablack, Ariana Orvell, Joseph Bayer, Oscar Ybarra, John Jonides, and Ethan Kross. 2015. Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General* 144, 2: 480–488. <https://doi.org/10.1037/xge0000057>
- [83] Erin A. Vogel, Jason P. Rose, Lindsay R. Roberts, and Katheryn Eckles. 2014. Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture* 3, 4: 206–222. <https://doi.org/10.1037/ppm0000047>
- [84] David Watson, Lee Anna Clark, and Auke Tellegen. 1988. Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology* 54, 6: 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- [85] David Watson and Auke Tellegen. 1999. Issues in dimensional structure of affect—Effects of descriptors, measurement error, and response formats: Comment on Russell and Carroll (1999). *Psychological Bulletin* 125, 5: 601–610. <https://doi.org/10.1037/0033-2909.125.5.601>
- [86] Ladd Wheeler and Kunitate Miyake. 1992. Social comparison in everyday life. *Journal of Personality and Social Psychology* 62, 5: 760–773. <https://doi.org/10.1037/0022-3514.62.5.760>
- [87] Michelle Yik, James A. Russell, and James H. Steiger. 2011. A 12-point circumplex structure of core affect. *Emotion* 11, 4: 705–731. <https://doi.org/10.1037/a0023980>

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