Emotion in Social Media

By

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Professor Coye Cheshire
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Abstract

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The role of emotion in social media has been the subject of considerable research and media attention. But while stereotypes about the emotional profile of status updates — that they are overly-positive, or overly-angry — have solidified, evidence remains circumstantial and indirect. Further, although researchers have made numerous efforts to use the emotions we express in status updates to make inferences about our emotional lives — generating national happiness indices, predicting mental illnesses and evaluating emotional outcomes of experimental interventions — little is known about the validity of these inferences at the individual level, and researchers have largely ignored the impact of self-presentation and privacy concerns on validity. Finally, while debate continues about the emotional impacts of browsing social media in the course of day-to-day life, researchers have focused only on a limited set of emotions, rather than investigating the range of human emotion.

To address these issues, I present three analyses regarding (1) the emotions we express in social media, (2) what can be inferred about our emotional lives in general based on how we express ourselves in social media, and (3) the emotional experience of browsing social media. I conduct experience sampling for one week with participants in a Facebook sample ($N = 344$) and Twitter sample ($N = 352$), gathering data about their day-to-day emotional lives. I then compare this data to participants' ratings of the emotional contents of their most recent status updates so as to reveal the distinct emotional profile of status updates and address questions regarding the validity of inferences. Data from experience sampling is also used to reveal the emotional experience of browsing social media.

In the first analysis, across a broad spectrum of emotions, I find status updates to be largely similar in emotional profile to emotional life in general, though Facebook posts are more positive on average, and tweets are more negative. Both Facebook posts and tweets exhibit higher levels of emotions associated with activation (energy, alertness) and lower levels of emotions associated with deactivation (drowsiness, sleepiness) than emotional life in general. In the second analysis, I find that the emotions we express in status updates have a low-moderate

correlation with day-to-day emotional life, suggesting that efforts to infer emotional life from the emotions we express in status updates have some validity. The association is weaker, however, for individuals higher in attention to self-presentation and privacy in the Facebook sample, and disappears in both the Facebook and Twitter samples when a popular sentiment analysis program known as Linguistic Inquiry and Word Count (LIWC) is used to measure the emotional contents of status updates. Finally, in the third analysis, I find that the emotional experience of browsing social media is characterized primarily by deactivation (by winding *down*), with a slight tilt toward negative emotion. While browsing Facebook, on average, is associated with slightly elevated feelings of envy, browsing Twitter is associated with relief of envy. Further, results suggest little potency for theories of emotional contagion in social media. Overrepresented emotions in Facebook posts and tweets do not tend to be reflected in the emotional experience of browsing Facebook or Twitter.

Among many implications, the results of this dissertation suggest that social media is not whipping people into a frenzy on average, but rather, is predominantly calming. While counterintuitive, this result is robust and is found with both Facebook and Twitter.

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To my family

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Chapter 1. Introduction

In the decade or so since the founding of Twitter and Facebook, social media has become an undeniable global phenomenon, with 313 million and 1.86 billion people using the respective services each month, according to recent company figures[1]. There has been no topic more central to the study of social media than emotion. As motivator of thinking and behavior, as a force that can tie us together or drive us apart, there is no topic more central to our highest hopes or deepest fears for social media than emotion. Emotion is the outrage and hope that fuels social media social movements from the Arab Spring to Black Lives Matter, and it is the hostility that silenced women in Gamergate[2]. Emotion is the sadness that spreads through social media upon the death of a celebrity or in the wake of another mass shooting. Emotion is the happy life we are concerned with portraying to our friends, the moments of satisfaction we cannot wait to tell the world about, and the envy of receiving the highlights of our friends' lives while we carry on with ordinary life. Emotion is the amusement that spreads with the latest clever meme and, as this dissertation will suggest, emotion is the calm of daily life that, counterintuitively, is reflected as one of the dominant emotions of social media.

This dissertation addresses some of the fundamental questions about emotion in social media, questions about how we express ourselves, about what can be inferred about our emotional lives based on how we express ourselves, and about the impact of receiving the expressions of others on our own emotions as we browse social media in daily life. Along the way, this dissertation helps resolve significant conflicts in the literature and, most importantly, helps establish basic descriptive facts about emotion in social media that have been sorely underdeveloped. The outcome is a richer, more nuanced picture of emotion in social media, one that supports and challenges prevailing notions.

One of the striking conflicts in the literature follows from two major lines of research. In the first, researchers seek to use the emotions we express in status updates to make inferences about our emotional lives, aiming to visualize human emotional rhythms, generate national happiness indices, predict mental illnesses, and evaluate the emotional outcomes of experimental interventions. In the second, researchers explore issues of self-presentation and emotional expression in social media, with many suggesting we are self-conscious about how we come across and that we tend to portray ourselves in an idealized, overly-positive fashion. If, as a result of these self-presentation efforts, we downplay our negative emotions or otherwise regulate our emotional expressions, why should researchers assume status updates are a reliable measure of our emotional lives? Strangely, these two lines of research seldom interact, and so the conflict between them is rarely addressed.

Another important conflict in the literature centers on the emotional and well-being effects of browsing social media. Some researchers believe that if we tend to portray ourselves in an idealized, overly-positive manner, then browsing social media may lead to widespread feelings of envy and to declines in well-being as we compare our lives unfavorably to the rosy depictions of others' lives. Competing with this is another line of research that draws from the theory of

[1] See https://about.twitter.com/company and http://newsroom.fb.com/company-info, visited March 31, 2017.
[2] See e.g. Papacharissi (2015), Ghonim (2012) and Rickford (2016). For Gamergate, see Chapter 2.

emotional contagion and claims positive emotions in our social media feeds should make us feel positive, and negative emotions negative. Still other research suggests browsing social media makes us feel bad because we spend a lot of time doing it, but do not perceive it to be very meaningful. While these different lines of research do interact to some extent, there is a surprising lack of evidence establishing the emotional experience of browsing social media in the first place, making it difficult to know what, precisely, we are trying to explain.

Other seeming conflicts include the idea that social media is hostile and abusive, as opposed to overly-positive, and broader conflict between theories of inhibition and disinhibition in the literature, which suggest we are either more constrained or more liberated in how we express ourselves. In general, I help resolve these conflicts by providing evidence that each line of research has important limitations and, in the case of the browsing experience, by suggesting that the primary effect has yet to be explained.

Three analyses

The core of this dissertation is a set of three analyses that relate the emotions we express in status updates to the emotions we experience in daily life. In the first analysis, I compare the two to reveal the unique emotional profile of status updates and test notions that status updates are a biased representation of emotional life. This is the first known comparison of status updates and day-to-day emotional experience in the literature. In the second analysis, I examine the validity of efforts to make inferences about our emotional experiences based on the emotions we express in status updates. I present the first known effort to demonstrate validity for emotional experience at the individual level, the first investigation of individual differences, like privacy concern or emotional expressivity, that may strengthen or weaken validity, and the first effort to explore the specific effect of sentiment analysis on overall validity in practice. Finally, in the third analysis, I examine the emotional experience of browsing social media in daily life, offering one of very few accounts outside the lab and the first to assess a range of emotions.

In doing so, I draw from three key strengths of this dissertation not commonly found in the literature. First, this dissertation makes deliberate use of baselines, primarily the baseline of day-to-day emotional experience. If we are to show that emotion in social media is distinct in some way, whether overly-positive or overly-angry, then it must be distinguished in the first place from emotional life as a whole. It is not sufficient, for example, to establish a positivity bias by demonstrating that we express more positive than negative emotion in our status updates because people may experience more positive than negative emotion in life. Second, this dissertation deploys a wide range of emotion measures, covering the broad landscape of emotion as well as specific emotions implicated in previous work. Among other things, this range helps establish the relative importance of specific emotions and emotional effects. Third, this dissertation examines both Twitter and Facebook, helping to address how well theories about emotion in social media may generalize. Other potential advantages include the use of naturalistic over lab-based data, self-reported emotions over shortcuts like emotion hashtags or emotion words, and the recruitment of diverse samples of participants over a reliance on undergraduate students.

Dissertation outline

In the next section, I review some of the important terms used in this dissertation. Then, Chapter 2 presents a review of the related literature, Chapter 3 details my research questions, hypotheses and methods, Chapter 4 describes the results of the analyses and Chapter 5 discusses the results. Questionnaires and supplementary materials are provided in appendices.

Some definitions

Emotion

Within psychology, there continues to be spirited debate about the nature and definition of emotion. The traditional view holds that there is a small set of "basic" emotions defined as automatic, tightly-coordinated psychological, physiological and behavioral responses to specific regularities of the evolutionary environment, such as the need to escape from a predator (fear) or expel an impurity (disgust). Basic emotions come with specific subjective or conscious experiences and are signified by distinctive facial or body expressions (e.g. smiling displays happiness) (Ekman, 1992; Ekman, 1999; Fredrickson, 2001; Sabini & Silver, 2005; Tracy, 2014). Core to this view is the belief that emotions are associated with specific action tendencies or *thought-action repertoires* such as the association of anger with the urge to attack. People who are in the throes of anger do not always attack, but their ideas about possible courses of action narrow to anger-related behaviors, like attacking, and their bodies mobilize the physiological resources necessary to carry out the behaviors. While negative emotions are believed to narrow our thought-action repertoire to allow for decisive action in threatening situations, positive emotions like interest, pride and love are said to emerge in non-threatening situations and to broaden the thoughts and actions that come to mind, enabling us to enhance our personal and social resources (Fredrickson, 2001). In summary, basic emotions represent specific, universal adaptations that evolved to promote survival.

An important group of alternative views embraces a wider variety of emotions by decoupling the conscious appreciation (feeling, experience) of emotions from other organismic processes traditionally associated with them (Russell, 2003; Russell, 2009; Barrett, 2009; LeDoux, 2014). For example, several automatic threat responses that are hard-wired in the brain, like freezing in place, are traditionally grouped into the emotion "fear," but people can express these responses without being consciously aware of the threat or feeling afraid, and people can feel afraid in the absence of one of these threat responses (LeDoux, 2014). Freeing emotions from the requirement of an automatic, tightly-coordinated response (e.g. a specific physiological signature or facial expression) is seen as permitting the recognition of a greater variety of emotions and allowing for greater variation within emotions.

Ironically, from this viewpoint, emotions do not exist apart from cognition but perhaps are best defined *as* cognitions or conceptual acts that allow us to usefully interpret, respond to and communicate about patterns of sensation from in and outside of our bodies. We experience emotions when we interpret our internal state as related to or caused by our surroundings. Because many human concerns are universal, many emotions are recognizable across cultures, but because emotions are not biologically reified, different cultures may detect and assign meaning to different patterns of sensation (Barrett, 2009). The Ilongot tribe in the Philippines, for example, has *ligit*, a form of euphoric aggression (Rosaldo, 1980) and Germans have *schadenfreude*, or pleasure in another person's pain. Here, emotions are no less meaningful, but they are allowed greater varieties of related perceptions and behaviors.

Among many advocates of this view, a key ingredient in the sensory patterns we call emotions is *core affect*, defined as a simple, consciously-accessible feeling of pleasure or displeasure and drowsiness or energy (Russell, 2003; Russell, 2009; Barrett, 2009). Core affect was derived from studies of self-reported emotions and moods, which found that part of the meaning of any emotion or mood term can be summarized along the dimensions of valence (pleasant–unpleasant, positive–negative) and arousal (drowsy–energized, deactivated–activated). Core affect is thought to be a neurophysiological state, and is similar to the notion of a mood in that it can be experienced in the absence of known stimuli and be long-lasting, but can also be attributed by the individual to internal or external stimuli and change rapidly. Indeed, core affect can become an emotion when we consciously relate it to our surroundings. A feeling of activated displeasure, for example, might be become anger when attributed to someone blocking a goal, or fear when attributed to someone dangerous, or envy when attributed to someone possessing something we desire (Smith & Kim, 2007). Finally, similar to basic emotions, core affect is thought to facilitate mood-congruent ideation, perception, memory, judgment and behavior (Russell, 2003). Positive affect tends to call to mind positive memories and encourage favorable judgments.

Though basic emotions theory and the alternative outlined here differ on whether emotions are few and given by biology, or varied and a product of understanding, the two perspectives are complementary in practice through the use of self-reports of subjective or conscious experience, as in this dissertation. 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. Ekkakakis, 2013). Core affect also contributes to a more complete understanding of emotional life by drawing attention to states of deactivation or calm often neglected in research. Throughout this dissertation, the term "emotion" refers broadly to emotional phenomena, including emotional experience, while "emotional experience" refers more specifically to the subjective or conscious elements of emotion, including core affect.

Well-being

Another important term in this dissertation is "well-being," which refers to the concept of "subjective well-being" or "happiness" from behavioral economics and positive psychology, as well as to a broader portfolio of related psychological outcomes like mental health and social support. As used in behavioral economics and positive psychology, subjective well-being has two components: (1) emotional experience and (2) life satisfaction, which is a retrospective evaluation of life as a whole (e.g. Diener, Oishi, & Lucas, 2009; Kahneman & Krueger, 2006). Two components are involved because experience and memory are distinct. As demonstrated in vivid experiments involving colonoscopies, our memory or evaluation of an event only roughly corresponds to what we actually experience during the event. In looking back on events or perhaps on life, we tend to focus on salient high and low points, and on what most recently happened, and overlook the full duration of our experience (Redelmeier and Kahneman, 1996). As a result, subjective well-being separately assesses emotional experience (life as it occurs) and life satisfaction (life as remembered). Memory is still important, however, because of its role in decision-making and identity (Diener et al., 2009; Kahneman & Krueger, 2006). Throughout this dissertation, “emotional experience” refers to emotional life — consciously and subjectively — as it occurs, rather than to retrospective evaluations or emotional dispositions.

People with more positive and fewer negative emotional experiences, and higher life satisfaction, are considered higher in subjective well-being and happier. Subsequently, subjective well-being is thought to promote a number of benefits in addition to its inherent desirability, including a broadened mindset, creativity and cognitive flexibility, productivity and long-term goal attainment, stable romantic relationships, positive coping, cardiovascular and immune system health, reemployment following loss of a job, and charitable behavior (e.g. Fredrickson, 2001; De Neve, Diener, Tay, & Xuereb, 2013; Diener et al., 2009; Kahneman & Krueger, 2006). Note that positive emotion is seen as generally but not invariably desirable (Gruber, Mauss, & Tamir, 2011), as when people are urged to cross a busy street with caution, not elation. Other concepts in the larger well-being portfolio are thought to have benefits as well (e.g. Cohen, 2004).

Social media, Twitter and Facebook

Finally, Twitter and Facebook are part of a broad and constantly-evolving class of Internet-based communications and entertainment services known as “social media,” which allow people to establish connections and communicate with one another and with entities like organizations and public figures who maintain a presence on the services. Twitter and Facebook are also part of a narrower class of services called “social network sites” which, according to a widely-cited definition, allow people to “construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system” (boyd & Ellison, 2007, p. 211). Because, by 2011, most social network sites were organized around feeds or “streams” of aggregated content from a person’s connections, the authors updated their definition to include the ability to “consume, produce, and/or interact with *streams of user-generated content* provided by their connections on the site” (Ellison & boyd, 2013, p. 158, emphasis in original).

This dissertation refers to Twitter and Facebook as “social media” to align with common usage. If Google searches are an indicator of common usage, the term “social networking” peaked in 2010 shortly after it was overtaken by “social media.” Many researchers equate social media with “Web 2.0,” a trend around user-generated content (e.g. Marwick, 2013), but that term peaked in 2007 and refers to services, like Wikipedia, that have different purposes[3]. All of these services, however, are part of a more general class known as “computer-mediated communication,” which I discuss in relation to my research questions in the next chapter.

Twitter is a service that invites people to broadcast short messages known as status updates or “tweets” to other users who have opted to receive them, known as their “followers.” People publish a range of messages, which are limited to 140 characters, including their whereabouts, current activities, thoughts, feelings, photos, videos, and links to articles or other online sources (perhaps responding to the service’s prompt, “What’s happening?”). When they sign onto Twitter through their Web browser or app, users see tweets from the people they follow in a feed organized mostly in reverse chronological order, though interesting tweets may be surfaced out of order algorithmically (Rosania, 2015; Jahr, 2016). Tapping the buttons shown on a tweet, users can reply, “like” or “retweet,” which broadcasts the tweet to their own followers. Although

[3] See Appendix 1 or visit https://g.co/trends/mg4C4 for a comparison of Google searches for all three terms.

users may “protect” their tweets so they are only viewable by others they approve, most tweet publicly, and public tweets can be embedded into Web pages for discussion elsewhere on the Internet. Twitter allows people to tweet under a pseudonym, but many also use their real names.

Created in early 2006, Twitter now has 313 million users each month, with 21% of accounts in the United States and 500 million tweets published each day[4]. Although Twitter has struggled to grow its user base (Kosoff, 2017), the service is influential during major events as a result of its real-time emphasis (via reverse chronology), publicness, length restrictions (encouraging rapid dissemination of information) and features like hashtags, which allow people to self-categorize their tweets to be part of a discussion (a hashtag can be any term preceded by a hash “#” sign). Twitter is also influential outside of major events because of the high-profile users it attracts, including celebrities and politicians, who sometimes interact with followers (Isaac & Ember, 2016). Because users can follow others with no requirement of reciprocity, Twitter is often described as an “interest graph,” or model of a person’s interests and curiosities (Russell, 2013).

Facebook started in early 2004 as a Web-based directory for students at colleges and universities, where they could create a personal profile and browse the profiles of others. In late 2006, Facebook opened to everyone and introduced News Feed, which remains central to the service[5]. Similar to Twitter, when people sign onto Facebook through their Web browser or app, they see News Feed, which displays recent status updates known as “posts” from others they have connected with, known as “friends.” Unlike Twitter, the connection is reciprocal (both users begin to receive each other’s posts in News Feed) and people typically “friend” others they know in real life, though it is possible to follow public entities as well. Also unlike Twitter, Facebook heavily curates the order of posts in News Feed, prioritizing content from friends and family as well as posts it has algorithmically determined may inform and entertain the user, based partly on the user’s prior behavior as well as the behavior of friends and others (Backstrom, 2013)[6].

As on Twitter, people broadcast a range of content to their friends on Facebook with their posts (perhaps responding to the service’s prompt, “What’s on your mind?”). In addition to text, photos, video and links, Facebook also invites users to include specific annotations about what they are doing or feeling, who they are with and where they are[7]. In News Feed and elsewhere, users can interact with posts by choosing one of six emotional reactions (“like,” “love,” “haha,” “wow,” “sad” and “angry”), by leaving a comment or by “sharing” the post, which broadcasts it to their own friends, like a retweet. Because of Facebook’s focus on personal relationships, posts are often intended to inform friends and family of significant life moments, like starting a new job or relationship, achieving a goal or traveling, though it is also common to discuss news about the world. Facebook is less public than Twitter, by default limiting the audience for posts to a user’s friends, but is non-anonymous, requiring users to identify themselves by their real names[8]. Facebook offers a range of other major features, including messaging and support for groups and

[4] For recent company figures and important company milestones, visit https://about.twitter.com/company and https://about.twitter.com/company/press/milestones, respectively.
[5] For company statistics and important milestones, visit https://newsroom.fb.com/company-info.
[6] See also https://newsfeed.fb.com/values and https://newsroom.fb.com/news/category/news-feed-fyi.
[7] Unlike tweets, Facebook posts have a high character limit (Schroepfer, 2011).
[8] See http://newsroom.fb.com/news/2014/05/making-it-easier-to-share-with-who-you-want and https://www.facebook.com/help/112146705538576.

events, and today has 1.86 billion monthly users, with 15% of daily users residing in the United States and Canada[9].

In the next chapter, I discuss the related literature.

[9] For company statistics, visit https://newsroom.fb.com/company-info.

Chapter 2. Related literature

This dissertation addresses fundamental questions about how we express ourselves in social media, about what can be inferred about our emotional lives based on how we express ourselves, and about the emotional experience of browsing social media. The core of the dissertation is a set of three analyses that relate the emotions we express in status updates to the emotions we experience in daily life. In the process, I help resolve significant conflicts in the literature, where concern about how we present ourselves in social media contrasts with optimism about how status updates might be used to understand national happiness, and where several lines of research compete regarding the emotional and well-being impact of browsing social media. In this chapter, I review the literature related to these questions and conflicts, discussing the evidence to-date and where gaps remain.

Self-presentation and emotional expression in social media

Self-presentation and emotional expression are the focus of a considerable amount of research on social media. Yet, while a number of studies suggest we present ourselves in especially idealized and positive terms, the evidence for this remains underdeveloped, particularly because few studies involve comparison with a relevant baseline. Further, in contrast to the idea that social media inhibits self-expression, especially negative emotions, early theories from the wider literature on computer-mediated communication imply we may be *disinhibited* in social media, or more liberated to express ourselves, including negative emotions. Research on the emotions that stimulate information sharing or "virality" add another layer, suggesting arousal rather than valence is key in motivating sharing. If this is the case, status updates are likely to be more aroused, but may not be more positive or negative.

Inhibition and adaptation

Perhaps the most influential theorist in research on self-presentation in social media is mid-twentieth century sociologist Erving Goffman, who memorably likens social interactions to theatrical performances. In the presence of "audiences," or the different groups of people in our lives, Goffman says we take great pains to leave the right impression and play the "character" we want to be seen as or audiences expect us to be given our role (1956). Because we have multiple roles in life (e.g. employee, leader, parent, spouse or friend to various friend groups), and because different roles come with different expectations, we find ourselves playing somewhat different characters depending on the audience. Further, given that our different self-portrayals can conflict, it may be necessary to engage in "audience segregation," where we attempt to keep audiences separated so we can maintain a coherent self-portrayal with each (pp. 31, 83-86). An example is the story of 1960s civil rights activist Stokely Carmichael, who used different speaking styles to address white elite and black congregational audiences, but who was forced to choose a style when he began speaking on television and radio, where the two audiences merged. Carmichael worried he would alienate white audiences when he chose to use his pastoral voice in broadcast media, and he was right (boyd, 2014, p. 31).

Goffman also describes at length the notion of "idealization," or the human tendency to present ourselves to others as better than we are (1956, pp. 22-32), "accentuating certain facts and concealing others" (p. 43). Goffman says people suppress evidence of "dirty work" and attempt to "foster the impression that … it was not necessary for them to suffer any indignities, insults, and humiliations" to achieve their positions (pp. 28-29). It is not easy to maintain an idealized self-portrayal in social settings, however, because we are "human beings" subject to "variable impulse with moods and energies that change from one moment to the next" (p. 36). A great deal of "expressive control" is required to maintain appearances, and because audiences are sensitive to discrepancies (pp. 33-37), "a single note off key can disrupt the tone of an entire performance" (p. 33). Concluding his analysis of self-presentation in daily life, Goffman notes, "it seems there is no interaction in which the participants do not take an appreciable chance of being slightly embarrassed or a slight chance of being deeply humiliated" (p. 156). Thus, he says, we must be "practiced in the ways of the stage" (p. 162).

Since their emergence over a decade ago, services like Twitter and Facebook have seemed to offer a new kind of stage for the presentation of self, with distinct opportunities as well as challenges. In her influential book, *Alone Together*, Sherry Turkle writes about the high level of expressive control offered by social media and other services for the presentation of self, where "we can write the Facebook profile that pleases us" and "edit our messages until they project the self we want to be" (2011, p. 12). Across interviews with hundreds of teens and adults, Turkle finds people to be afraid of the embarrassment Goffman describes and eager to reduce risk and assert control over how they come across, resulting in self-portrayals even more idealized than Goffman depicted. "On social networking sites such as Facebook," Turkle writes, "we think we will be presenting ourselves, but our profile ends up as somebody else — often the fantasy of who we want to be" (p. 153). One of Turkle's participants, a college senior, warned her not to be fooled by anyone "who tells you that his Facebook page is the 'the real me.'" Putting it in Goffmanian terms, he continued, "It's like being in a play. You make a character" (as quoted on p. 183). Though services like Twitter and Facebook are seductive because they offer greater opportunity for expressive control versus face-to-face interactions or telephone calls, Turkle argues such control ultimately "inhibits" authenticity (p. 273). In her view, expunging interactions of flaws and presenting simplified, idealized versions of ourselves ultimately distances us from one another and leaves us feeling more alone.

Around the time Turkle published her account, a study called "Misery Has More Company Than People Think" came to similarly provocative conclusions across four studies of undergraduate students (Jordan et al., 2011). In line with Goffman's theories and other research regarding the preferential suppression of negative emotions in social settings (Ekman & Friesen, 1969; Gross, Richards, & John, 2006), Jordan et al. find that people often underestimate the prevalence of negative emotions and overestimate the prevalence of positive emotions in others' lives because of the way others selectively hide negative emotions in social settings. They also find that underestimating the negative emotions in others' lives is a predictor of loneliness and lower life satisfaction, while overestimating positive emotions predicts lower life satisfaction. Although the study concerns social interactions generally, the authors suggest services like Facebook "may exacerbate common misperceptions of others' emotional lives because of the complete control that users have over the public image they project to the world through their photo albums, status updates, friendship networks, and so forth" (2011, p. 133). Like Turkle, Jordan et al. argue that the expressive control offered by social media can lead to detrimental outcomes.

Notably, while social media offers greater opportunity to control how we come across to others, it also seems to necessitate that we *exercise* such control because of new uncertainties and challenges, also thought to be inhibiting, related to audience and context. With some important exceptions like Snapchat, social media is generally characterized by *persistence*, in which expressions are permanently recorded, *scalability*, in which expressions can easily reach wide audiences, *replicability*, in which copying and modification is routine, and *searchability*, in which expressions can be surfaced through simple keyword searches (boyd, 2011).

These characteristics result in new uncertainties and challenges for social media users, including *invisible audiences*, *collapsed contexts* and a *blurring of private and public*[10] (boyd, 2011). Because status updates are recorded, easily spread and easily surfaced at any time through search, and because there is little indication of who has viewed status updates if no feedback is left[11], a great deal of our audiences may be *invisible* to us. This makes it difficult to know what may be socially appropriate to say, whether we are understood, or even if what we have said has caused some consequence for us, such as being declined for a job interview. Related to this are problems with a lack of audience segregation in social media, referred to as *context collapse*. Because usual spatial and temporal boundaries between audiences are not present, and because we connect with many different groups of people with many different expectations for our behavior, it can be difficult to determine how to act[12] (see also boyd, 2014, p. 31).

Finally, the boundary between *private and public* is blurred in social media because we are encouraged to discuss private aspects of our lives (what's on our minds, where we're located and so on) with large audiences we may not know well or at all (boyd, 2011). This, too, can create uncertainty about how to act. Although the Internet traditionally offered a degree of privacy through anonymity, Facebook users are required to identify themselves by their real names, as noted above, and are often identifiable in their profile photos as well. Twitter permits pseudonyms, but many people still choose to use their real names. Even Twitter users with pseudonyms may be known offline by many followers, and by default Twitter allows users to be found by email address and phone number, regardless of how they identify themselves[13].

People respond to these challenges to self-presentation in a number of ways. In *It's Complicated*, danah boyd writes about some of the extreme measures teens take to avoid problems related to audience and context. In one example, a seventeen-year-old named Shamika was often angered when her friends would take old status updates of hers out of context and use them to "start drama," and so she began to systematically cleanse her Facebook presence each day when she logged in — deleting all of the comments she had left for friends and all of her previous posts until her Facebook page was blank (2014, p. 64). Another teen, named Mikalah, who was in and out of foster care settings and thus accustomed to surveillance from guardians and state agencies, would repeatedly deactivate and reactivate her Facebook account. She reactivated her account at

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[10] boyd says these dynamics are not entirely new but "were never so generally experienced" (2011, p. 49).
[11] Facebook's Groups service offers a "Seen By" feature for discussion groups of under 250 members (see https://www.facebook.com/help/409719555736128), though a discussion of Facebook Groups is out of scope for this dissertation (see also http://newsroom.fb.com/news/2012/07/update-to-facebook-groups).
[12] The "circles" and "lists" features of Google+ and Facebook allow for audience segregation (see https://googleblog.blogspot.com/2011/06/introducing-google-project-real-life.html and https://www.facebook.com/help/204604196335128), though neither is widely used.
[13] See https://support.twitter.com/articles/20170001.

night to use the service, but then deactivated it when she was done to avoid snooping on her activities by adults, who seemed to use Facebook during the day (pp. 70-71).

More common as a practice for managing the collision of audiences and expectations in social media is the maintenance of multiple profiles on a single service or the juggling of profiles on several different services (boyd, 2014; Stutzman & Hartzog, 2012). For example, one teen in danah boyd's research turned to Twitter to gush about her love for the band One Direction, while sparing her broader audience on Facebook of her obsession (2014, p. 40). Another example is provided by lesbian, gay, bisexual and transgender (LGBT) youth, who might attempt to keep their first steps out of the closet separate from their established, straight identities (pp. 51-53). Other strategies include using coded language, untagging photos, and vetting friend requests or adjusting privacy settings to limit one's audience (boyd, 2014, pp. 65-69; Tufekci, 2008; boyd & Hargittai, 2010; Young & Quan-Haase, 2013). Of course, others may rebel against prudence and post risqué material with abandon (Donath, 2008).

Some scholars have raised the possibility of a "privacy paradox" in social media, wherein people profess concern for their privacy but then take few steps to preserve it (Barnes, 2006; Tufekci, 2008; Taddicken, 2013). For example, Tufekci (2008) defines privacy as a process of optimization between disclosure and withdrawal and, in surveys of undergraduate students who use Facebook and Myspace, finds little relationship between privacy concern and disclosure of personal information on those services. When viewed through many of the findings about self-presentation in social media, there seems to be no paradox and a great deal of attention by people to what they disclose, how they disclose it and whom they disclose it to. However, the optimization process behind privacy is difficult because people are balancing privacy concerns with a *desire* to disclose, and because maintaining privacy requires skill and self-control (boyd & Hargittai, 2010; Turkle, 2011, p. 259). Reflecting this, Turkle says, "for all the talk of a generation empowered by the Net, any discussion of online privacy generates claims of resignation and impotence" (p. 263). Thus, while there may be no paradox, there does appear to be a difficult balance to strike.

Perhaps the most common strategy for dealing with the self-presentation challenges of social media is to adapt what we say, disclose or express to the situation as we perceive it. Because it is difficult to know who is in our audience and listening, we might imagine an audience or envision an ideal (or nightmare) reader and adapt our speech to them (Marwick & boyd, 2011). Or perhaps we try to think of the many groups in our audience and make an effort to express what might appeal to the "lowest common denominator" or whole of them (Hogan, 2010; Wisniewski, Lipford, & Wilson, 2012). An obvious way to adapt is to self-censor or withhold what we would like to say, disclose or express (Newman, Lauterbach, Munson, Resnick, & Morris, 2011; Marwick & boyd, 2011; Das & Kramer, 2013; Sleeper et al., 2013; Lin, Tov, & Qiu, 2014; Choi & Bazarova, 2015; Wang, Burke, & Kraut, 2016; Burke & Develin, 2016; Beasley, Mason, & Smith, 2016). In a study with a random sample of millions of Facebook users, for example, Das and Kramer (2013) find that about 33% of posts are self-censored at the last minute, meaning someone began to type a status update (at least five characters) but then deleted it. Similarly, Sleeper et al. (2013) find in a small diary study that people self-censor the majority of things they think to post on Facebook, most often because of concerns about how they will come across. Beasley et al. (2016) also find in large samples of undergraduate students that many claim to never or only rarely express their feelings on Twitter and Facebook.

Because studies seldom provide a baseline from the offline world, it is difficult to assess how often we withhold or self-censor in social media compared to the offline world. Many studies do suggest, however, that people adapt their behavior in social media to the specifics of their situation. For example, a higher level of context collapse is associated in status updates with less expression of negative emotion (Lin et al., 2014), higher levels of self-censorship (Das & Kramer, 2013), lower self-disclosure (Wang et al., 2016) and less use of emotion annotations (Burke & Develin, 2016) on Facebook, and lower self-disclosure intimacy on Twitter and Facebook (Choi & Bazarova, 2015)[14]. People with larger audiences on Facebook express more positive emotion (Lin et al., 2014) and they self-disclose less (Wang et al., 2016).

People may also adapt their behavior to norms that have emerged and to feedback they receive from their audiences. Bryant and Marmo (2012), for example, worked with focus groups and a large sample of undergraduate students to identify norms for behavior on Facebook and assess how broadly they are shared. The most widely-endorsed norms relate to being considerate about how one's Facebook posts may affect others, and admonitions to present oneself "positively but honestly." Another study of norms on Facebook suggests people see it as important to share remarkable or personally newsworthy content, but without coming across as too self-enhancing, and to avoid oversharing or boring one's audience with routine content (Uski & Lampinen, 2014). Still other studies suggest people seek attention and validation on Twitter and Facebook and adapt their behavior to the feedback (or lack thereof) they receive, quantified in counts of likes, retweets, comments, followers and so forth (Marwick & boyd, 2011; Tufekci, 2013; Marwick, 2013; boyd, 2014, pp. 148-150; Grosser, 2014). Similarly, people use social media to savor or *capitalize* on positive events, using the attention and validation they receive from status updates they write about the events to enhance the positive emotions of the events themselves (Sas, Dix, Hart & Su, 2009; Bazarova, Choi, Schwanda Sosik, Cosley, & Whitlock, 2015).

A positivity bias?

Though a desire for authenticity is evident among participants in some of the research presented so far (Marwick & boyd, 2011; Bryant & Marmo, 2012; Uski & Lampinen, 2014), overall this work suggests something of a skew toward the positive in our social media self-portrayals and toward idealization and self-enhancement, perhaps even to the extent that we present, as Turkle puts it, a "fantasy of who we want to be" (2011, p. 153; see also Zhao, Grasmuck, & Martin, 2008). As discussed below, much of the research on how social media affects well-being also relies on the assumption of a positivity bias, especially in our status updates. Does the quantitative evidence demonstrate such a positivity bias?

The question of bias is more difficult to answer than simply showing we express more positive than negative emotion in status updates because bias implies some departure from a baseline or expectation, and there is no reason to expect positive and negative emotion to equally occur. As a starting point, however, most studies seem to show, using a variety of methods, that we express more positive than negative emotion in tweets and Facebook posts (e.g. Golder & Macy, 2011, see supplemental; Pfitzner, Garas, & Schweitzer, 2012; Kramer, Guillory, & Hancock, 2014;

[14] In Das and Kramer (2013), Lin et al. (2014), Wang et al. (2016) and Burke & Develin (2016), context collapse is measured as the inverse of *network density*, which is the ratio of existing connections to the total number of possible connections in the user's audience (colloquially, how "tightly-knit" the audience is). In Choi & Bazarova (2015), context collapse is measured by asking participants to indicate which of 23 relationship categories they have with members of their audience.

Tsugawa & Ohsaki, 2015; Bazarova et al., 2015; Lin & Utz, 2015; Utz, 2015; Burke & Develin, 2016), although De Choudhury, Counts, and Gamon (2012) use emotion hashtags in tweets (e.g. #excited, #bored) to explore the emotional profile of tweets and find they are more frequently negative[15]. Two studies compare posts to private messages on Facebook and find posts to be more positive than private messages, using self-reported ratings from student samples (Bazarova et al., 2015; Utz, 2015). A third study finds posts contain fewer negative words than private messages on Facebook, using popular sentiment analysis program Linguistic Inquiry and Word Count (LIWC) with a sample of undergraduate students (Bazarova, Taft, Choi, & Cosley, 2013).

Although private messages begin to provide some information as a comparator, they represent a narrow situation. Instead, I argue that the hypothesis of a positivity bias implies we present ourselves more positively in status updates than we feel in life *generally* and perhaps more positively than we feel or present in social settings generally. Positive emotion outweighs negative emotion in life generally (Diener, Kanazawa, Suh, & Oishi, 2015) and even more so in our experience of social settings (McAdams & Constantian, 1983; Csikszentmihalyi & Hunter, 2003; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) and in our self-presentation in social settings (Jordan et al., 2011). Therefore, a positivity bias in status updates is only established if they are more positive than emotional life or perhaps even social settings. Similar reasoning is used by Jordan et al. (2011), who find people misgauge the emotional lives of others and perhaps more so because of social media. Here again, the baseline is emotional life.

To-date, no study appears to offer a comparison of status updates and emotional life, although three studies come closer than others. In the first, researchers use experience sampling with a sample of undergraduate students to assess how people feel after posting or commenting on posts on Facebook, finding that people are more positive and more energized (aroused) up to 10 minutes after they post or comment (Bayer, Ellison, Schoenebeck, Brady, & Falk, 2017). Although the authors do not assess the actual emotional contents of posts and comments, and do not distinguish posting from commenting in their analysis, which may have distinct effects (see e.g. Burke, 2011), the study seems to align with the notion that people use status updates to selectively share or capitalize on positive emotions[16]. In the second study, Choi and Toma (2014) ask a sample of undergraduate students to report each day for one week on whether they shared the day's most important positive or negative event with others and, if so, how they shared it. The authors find tweets are used more often to share positive than negative events, while there is no significant difference for Facebook posts and neither is used to share the important event of the day very often[17]. While the authors focus on notable events rather than emotional life as a whole, the study offers insight into how the emotional tenor of an event may help determine where we choose to share it. In Twitter's case, it seems the service is chosen more often to share positive events.

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[15] As with research using emotion annotations on Facebook (Burke & Develin, 2016), however, emotion hashtags are a case of selecting on the dependent variable. Using only status updates explicitly labeled by the user with an emotion to study the emotional profile of status updates may produce misleading results.

[16] Of course, people may also feel good after expressing negative emotions on Facebook (e.g. through catharsis or perhaps *schadenfreude*), though this may not be the typical case.

[17] Face-to-face conversation, texting and phone calls dominate sharing of important events. Participants were randomly assigned to report on positive or negative events during the study.

Finally, in the third study, researchers ask a sample of undergraduate students for their impression of how likely they are to disclose positive and negative emotional experiences on Facebook and in real life, finding that while students say they are more likely to disclose positive than negative emotions in both contexts, the difference is greater for Facebook (Qiu, Lin, Leung, & Tov, 2012). The authors next ask a sample of 37 undergraduate students for their impressions of the emotional lives of six friends and then ask them to browse the Facebook profile of each friend and report on his or her emotional life as it appears on Facebook. Qiu et al. (2012) find that friends seem happier on Facebook and seem to display more positive and fewer negative emotions on Facebook than in real life.

Qiu et al. (2012) seem to offer the clearest demonstration to-date of a social media positivity bias and the only support for the suspicion of Jordan et al. that Facebook's positivity exceeds that of our self-portrayals in social settings where friends and others can observe us (2011). However, the authors use a small sample and rely for their comparisons on general impressions rather than specific instances of own and friend behavior, which means responses are relatively more likely to reflect participants' beliefs than specific instances of behavior (see Robinson & Clore, 2002 and Chapter 3). The authors also do not distinguish status updates from other elements or communications channels on Facebook in either part of their study, which makes comparison with previous research, which has often focused on status updates, more difficult. Overall, the quantitative evidence for a positivity bias in status updates or social media as a whole remains thin, especially for Twitter. Further, most of the evidence on self-presentation, idealization and over-positivity in social media, whether qualitative or quantitative, comes from studies of young people in their teens or in college, leaving a majority of the population underexamined.

Disinhibition and negative emotion

Although the literature on self-presentation and emotional expression in social media has focused on the way social media can be especially constraining or inhibiting, earlier theories of computer-mediated communication suggested the opposite: that, in many ways, computers were distinctly liberating or *disinhibiting*. For example, many studies suggest computer-based surveys elicit greater self-disclosure than face-to-face or even paper-and-pencil surveys, particularly with respect to stigmatized or socially-undesirable topics, such as a willingness to report more symptoms in a clinic for sexually-transmitted infections (Robinson & West, 1992), greater alcohol consumption (Lucas, Mullin, Luna, & McInroy, 1977), and a more complete psychiatric history (Carr, Ghosh, & Ancil, 1983). A recent study by Pew Research Center reconfirms this finding, showing that self-administered Internet questionnaires elicit less socially-desirable responses than telephone questionnaires with a live interviewer (Keeter, 2015). More broadly, early Internet services seemed to offer a refuge for people with stigmatized or socially-undesirable traits or inclinations and a chance to escape the bodily and social constraints of the offline world (Rheingold, 1993; McKenna & Bargh, 2000; McKenna, Green, & Gleason, 2002).

Computer-mediated communication was traditionally thought to be disinhibiting because it offered anonymity, greater expressive control and little in the way of synchronous or nonverbal feedback from interaction partners. Anonymity disinhibited by reducing the chance that our actions online would have consequences for our offline identity, thus allowing us to try on new identities and express whatever was on our minds (McKenna & Bargh, 2000; Suler, 2004). Greater expressive control, provided by the ability to compose and edit messages prior to transmission, was thought to promote idealization but also thoughtfulness and self-reflection, like writing a letter, and to ease self-disclosure among the socially-anxious (Walther, 1996; McKenna & Bargh, 2000; Amichai-Hamburger, Wainapel, & Fox, 2002). Computer-mediated communication also disinhibited because it lacked the nuanced cues and immediate feedback of face-to-face interactions, which help us understand how we are coming across. This feedback includes immediate verbal responses as well as nonverbal cues like eye contact, facial expressions, head nods, gestures, posture, pauses, tone of voice and so on (Kiesler, Siegel, & McGuire, 1984; Suler, 2004). The asynchronicity and crudeness of computer mediation meant we were unguided and uninhibited by these cues, and unburdened by the need to deal with them in the moment. Like the telephone, computer-mediated communication also allowed us to avoid eye contact, easing the discussion of sensitive topics (Suler, 2004).

The picture painted by this literature is nuanced, but a conclusion seems to be that traditional computer-mediated communication disinhibits the expression of stigmatized or socially-undesirable sentiments, including negative emotions. While anonymity is less common in social media because Facebook prohibits it and because it is more typical today to connect with people we know offline, the most common use cases of social media continue to offer greater expressive control and to lack the synchronous or subtle nonverbal feedback of face-to-face interactions (though arguably things like emoji have helped some). To the extent, then, that status updates or social media resemble traditional channels like email, chat rooms and message boards, they may be characterized by more negative emotion and socially-undesirable sentiments than much of the literature has suggested.

Indeed, one of the ways social media resembles traditional computer-mediated communication is in the continued presence of flaming, harassment and other "e-bile" on services like Twitter and Facebook (Jane, 2015; Jane, 2016). Renewed attention has been given to e-bile in recent years, particularly as women from a number of countries have spoken publicly about rape threats and other sexualized harassment they receive in social media. A prominent case, known as "Gamergate," began when a game designer was falsely accused by her ex-boyfriend of sleeping with a journalist in exchange for a positive review of one of her games. This began a mass campaign of misogynistic harassment on Twitter and elsewhere against her and other women in gaming, involving vividly hostile language, bomb threats, "doxxing" (publicizing personal information to encourage harassment of a target), "revenge porn" (publishing sexually explicit material of a target) and the forcing of three women in the gaming industry from their homes (Parkin, 2014; Dewey, 2014; Jane, 2016).

On Facebook, a practice of defacing memorial pages of the deceased has become known as "RIP trolling." In one case, messages like "Help me, mummy. It's hot here in hell" were written on the memorial page of a deceased 14-year-old girl from the U.K. (Phillips, 2011; Carey, 2011; Jane, 2015). Reflecting theories of disinhibition, a teen in *Alone Together* reports giving herself "permission to say mean things" online because "you don't have to see their reaction" (Turkle, 2011, p. 241), while another says "there are no brakes" online (p. 250). Though there has been little research on the prevalence of e-bile in social media, a recent study by Pew Research Center finds that 40% of online adults have experienced some form of bullying or harassment on the Internet, with two-thirds reporting that their most recent incident occurred in social media (excluding reddit, gaming, email and so on). A quarter of women ages 18-24 also reported being sexually harassed online (Duggan, 2014). Overall, the presence of intense negativity and antisocial behavior suggests there are limits to any positivity bias in social media.

Arousal and virality

Finally, studies on information sharing or "virality" suggest an important role for arousal. While research on Twitter exploring whether positive or negative tweets are more likely to be retweeted has found mixed results (Gruzd, Doiron, & Mai, 2011; Pfitzner et al., 2012; Stieglitz & Dang-Xuan, 2013; Tsugawa & Ohsaki, 2015), research examining the effect of arousal on information sharing has been less equivocal. Berger & Milkman (2012) find in a study of the New York Times "most emailed" list that articles evoking high arousal emotions like awe, surprise, anger and anxiety are more frequently emailed to others, while articles evoking sadness, a low arousal emotion, are less frequently emailed. In follow-up experiments, the authors confirm that content evoking anger and amusement, both high arousal emotions, promotes sharing while content evoking sadness suppresses it.

In two experiments, Berger (2011) also finds that being in an aroused state promotes information sharing regardless of the content being shared. In the first experiment, the author finds that inducing people to feel high arousal anxiety and amusement makes them more likely to share an unrelated article and video with others than inducing people to feel low arousal sadness and contentment. In the second, the author finds that having people jog in place briefly, which is physically arousing, makes them more likely to email an unrelated article than people asked to sit still. Further supporting the idea that arousal promotes information sharing, Bayer et al. (2017) find that people feel more energized, a high arousal emotion, after posting or commenting on Facebook. Together, these studies imply that if arousal motivates information sharing, then status updates should be characterized by elevated arousal. Research has yet to confirm this, however.

Big Data and inferring emotional life

Optimism and caution

As researchers focused increasingly on issues of self-presentation and emotional expression in social media, global excitement was growing about how vast quantities of status updates and other "Big Data" might be put to use to understand human behavior and well-being. These data were generated by popular Internet services and mobile devices, and many observers believed they might provide unprecedented insights. A report from the World Economic Forum, for example, saw an opportunity to harness "torrents of data" to "identify needs, provide services, and predict and prevent crises for the benefit of low-income populations" ("Big Data, Big Impact," 2012), while a report from the Organization for Economic Cooperation and Development (OECD) highlighted potential for "new forms of data collected in conjunction with commercial transactions, internet searches, social networking, and the like" to "inspire innovative approaches" in the social sciences ("New Data," 2013).

At the United Nations, an initiative of the Secretary-General called "Global Pulse" has generated dozens of case studies since 2009 exploring how Big Data, especially status updates, might be used to monitor global health, well-being, food security, public opinion, biodiversity and other issues[18], while in the United States, the Central Intelligence Agency (CIA) was said to be "sifting through millions of tweets, Facebook messages, online chat logs, and other public data," to "glean insights into the collective moods of regions or groups abroad" (Keller, 2011).

[18] See http://www.unglobalpulse.org/projects.

Meanwhile, the European Commission expressed hope that "this magical material" would provide "fuel for innovation" in business and a "recipe for a competitive Europe" (Kroes, 2013).

A literature review by Kitchin (2013) highlights key features thought to set Big Data apart. Big Data is characterized in the literature as massive in volume, with datasets in the terabytes or petabytes; high in velocity, created in or close to real time; fine-grained, capturing behavior at the instance level; relational, with common fields allowing for datasets to be linked together; both structured and unstructured, with natural language being a common example of the latter; and exhaustive, covering or seeming to cover entire populations and systems (i.e. "N = all"). While large datasets like the U.S. Census have existed for a long time, they have traditionally come at a high cost, an infrequent rate (such as once every decade for the U.S. Census) and with a coarse level of detail, for example at a county or state rather than individual level (Miller, 2010). In contrast, the era of Big Data promised "a data deluge — of rich, detailed, interrelated, timely and low-cost data" providing "much more sophisticated, wider scale, finer grained understandings of societies and the world we live in" (Kitchin, 2013).

The seeming advantages of Big Data have fostered magical thinking in some writers and researchers, perhaps most memorably the former editor-in-chief of *Wired* magazine, Chris Anderson, who proclaimed the impending obsolescence of the scientific method (2008). Though Anderson is something of a provocateur, other writers and researchers saw a need to respond to the excited rhetoric and bold claims emerging from some Big Data research to emphasize the continued relevance of theory, domain expertise and considerations of research design and methodology. They also sought to draw attention to freshly-relevant issues such as overfitting of models and access to data (e.g. boyd & Crawford, 2012; Crawford, 2013; Kitchin, 2013; Ruths & Pfeffer, 2014; Tufekci, 2014; Lazer, Kennedy, King, & Vespignani, 2014; Panger, 2016).

This concern was underscored by the failure of Google Flu Trends, originally a prime example of the power of Big Data, to accurately predict rates of influenza. From 2008 until it was retired in 2015[19], Flu Trends provided estimates of flu rates up to two weeks earlier than the Centers for Disease Control and Prevention (CDC) based on flu-related searches. Among other issues, Flu Trends suffered from overfitting — with millions of search terms, some were bound to highly correlate with flu during the development process despite being structurally unrelated — and produced consistently subpar estimates, performing worse over long periods than a baseline model that projected forward from existing CDC data (Lazer et al., 2014). Flu Trends, Lazer et al. (2014) concluded, was a case of "big data hubris."

Studies claiming that tweets can be used to predict election returns — by counting mentions of candidates or by analyzing the emotion or "sentiment" of candidate mentions — also came under fire for hubris and for decisions seemingly designed to ensure positive results. One study claimed to correctly predict election returns in Germany, but only by arbitrarily excluding the party that received the most mentions on Twitter (see Jungherr, Jürgens, & Schoen, 2012). In a critique entitled, "No, You Cannot Predict Elections with Twitter," Gayo-Avello (2012) notes that relative mentions of "Obama" and "McCain" correctly predicted Barack Obama's victory in the 2008 U.S. presidential election, but also predicted landslides in every state, which did not occur.

[19] See https://research.googleblog.com/2015/08/the-next-chapter-for-flu-trends.html.

Representativeness and validity emerge as key themes in these critiques (Gayo-Avello, 2012; Metaxas & Mustafaraj, 2012; Mitchell & Hitlin, 2013). Even if everyone used Twitter, tweets might still be unreliable predictors of elections, or indicators of public opinion more generally, because not all people would use Twitter to talk about politics or use it to talk about politics at the same time. For example, a study by Pew Research Center suggests that liberals and conservatives tweeting in different numbers depending on the topic is partly responsible for the frequent divergence of tweet sentiment from the results of traditional public opinion surveys (Mitchell & Hitlin, 2013). In addition, by mentioning a candidate or issue, even positively, people are not necessarily indicating an intention to vote for the candidate or support the issue[20]. Despite these limitations, however, several studies report positive if qualified results relating mentions and sentiment in tweets to election returns and public opinion time series (e.g. O'Connor, Balasubramanyan, Routledge, & Smith, 2010; DiGrazia, McKelvey, Bollen, & Rojas, 2013; Cody, Reagan, Dodds, & Danforth, 2016). For example, Cody et al. (2016) report a high correlation between President Obama's quarterly approval ratings and quarterly averages of sentiment in tweets mentioning "Obama." While Mitchell & Hitlin (2013) demonstrate that tweets often diverge in specific instances, Cody et al. (2016) seem to show that aggregate or long-term trends may have more validity. In some ways, this negates the advantage of immediacy that Big Data is supposed to have, however.

Sentiment, mentions, and other features of natural language in status updates have been used to infer a range of phenomena, from forecasting movie box office revenues (Asur & Huberman, 2010), to predicting movements of the stock market (Bollen, Mao, & Zeng, 2010; Sul, Dennis, & Yuan, in press), to tracking regional caloric balance and obesity rates (Alajajian et al., 2015; Gore, Diallo, & Padilla, 2015). Some efforts have been more circumspect than others. Among the more careful efforts is Sul et al. (in press), who draw from the theory of Gradual Information Diffusion to develop and test hypotheses about the types of tweets most likely to be useful in predicting movements of the S&P 500 stock index. The authors confirm their hypotheses by analyzing millions of tweets with linear regressions as well as by constructing a trading strategy based on their hypotheses, which produced 11–15% annualized returns after trading costs.

Sentiment analysis, status updates and inferring well-being

Perhaps the most popular use of sentiment in status updates has been to infer the well-being of individuals and populations, whether emotional experience, life satisfaction or depression and related mental illnesses (Mislove, Lehmann, Ahn, Onnela, & Rosenquist, 2010; Kramer, 2010a; Golder & Macy, 2011; Dodds, Harris, Kloumann, Bliss, & Danforth, 2011; Bollen, Mao, & Pepe, 2011; Park, Cha, & Cha, 2012; Mitchell, Frank, Harris, Dodds, & Danforth, 2013; De Choudhury & Counts, 2013; De Choudhury, Counts, & Horvitz, 2013a; De Choudhury, Counts, & Horvitz, 2013b; De Choudhury, Gamon, Counts, & Horvitz, 2013; Schwartz et al., 2013; Ritter, Preston, & Hernandez, 2014; Wang, Khiati, Sohn, Joo, & Chung, 2014; Hao, Li, Gao, Li, & Zhu, 2014; Mochón & Sanjuán, 2014; Curini, Iacus, & Canova, 2015; Larsen et al. 2015; Durahim & Coşkun, 2015; Wu, Ma, Chen, & Ren, 2015; Sap et al. 2016; Wang, Hernandez, Newman, He, & Bian, 2016; Reece et al., 2016).

[20] The Twitter population also contains many organizations and automated services like bots that may mention candidates or issues but by definition are ineligible to vote.

More general than analyses looking at mentions of a particular person, company or issue, the idea behind these studies is that the emotions people express in their status updates can tell us something about how their emotions fluctuate day-to-day, about how satisfied they are with life, or perhaps whether they suffer from a mental illness like depression. On its face, this seems somewhat reasonable; many tweets and Facebook posts are clearly emotional, and people clearly use social media to talk about their lives. Status updates may also reflect people's emotions when they are not directly expressing how they feel, or even talking about themselves. However, as the previous discussion of self-presentation and emotional expression in social media highlighted, people self-censor and present themselves selectively to others, and the extent to which they do so seems likely to affect how valid status updates are for inferring well-being. Basic issues like how often people tweet or post on Facebook should also affect validity.

In addition, an analysis is generally required to infer the emotions people are expressing in their status updates before they can be related to well-being, and the validity of this analysis affects the validity of the whole enterprise[21]. Most often, researchers remove all but the text of the status updates and employ a technique called "sentiment analysis" to infer emotion from the text, whether positive, negative or something more specific like sadness. Some researchers use machine learning for sentiment analysis, which requires training a machine learning algorithm on the specific corpus to be analyzed (Reagan, Tivnan, Williams, Danforth, & Dodds, 2015). More typically in the academic literature, however, researchers use a "dictionary" method, which essentially involves counting up the number of words thought to signify a particular emotion and dividing by the total number of words in a given text to derive an estimate for that emotion. Dictionaries of these emotion words are not honed to the particularities of a corpus but rather are pre-specified by an expert or crowdsourced judging process, which means they generally underperform machine learning methods (Reagan et al., 2015). The most popular dictionary method is likely Linguistic Inquiry and Word Count (LIWC), which refers to itself as "the gold standard in computerized text analysis."[22] Updated last in 2015, LIWC's dictionary contains 620 words thought to signify positive emotion and 744 words thought to signify negative emotion. LIWC's negative emotion word category comprises three specific word categories for anger, anxiety and sadness (Pennebaker, Boyd, Jordan, & Blackburn, 2015).

Using sentiment analysis of status updates, researchers have produced a number of interesting visualizations and studies of well-being. Kramer (2010a) uses LIWC to analyze the status updates of 100 million U.S. English-speaking Facebook users, creating a "Gross National Happiness" index that displays day-to-day fluctuations in their collective emotions. This method demonstrates some face validity (see Figure 1), spiking on holidays like Thanksgiving and Christmas, and reaching a low point when singer Michael Jackson died on June 25, 2009 (Kramer, 2010b). Facebook introduced indices in 21 other countries before eventually shutting the project down, and collective celebrations and tragedies similarly registered on those indices as major high and low points, such as the earthquake in Chile in 2010, which caused a dramatic decline in that country's index (Zhang, 2010). These findings comport with Gallup surveys of

[21] As noted above, Facebook users can specifically annotate their posts with an emotion, and one study has used these annotations, which are present in about 8% of posts, in analysis (Burke & Develin, 2016). These annotations are not otherwise used in the published literature to-date, however.
[22] As quoted on the company's homepage, http://liwc.wpengine.com.

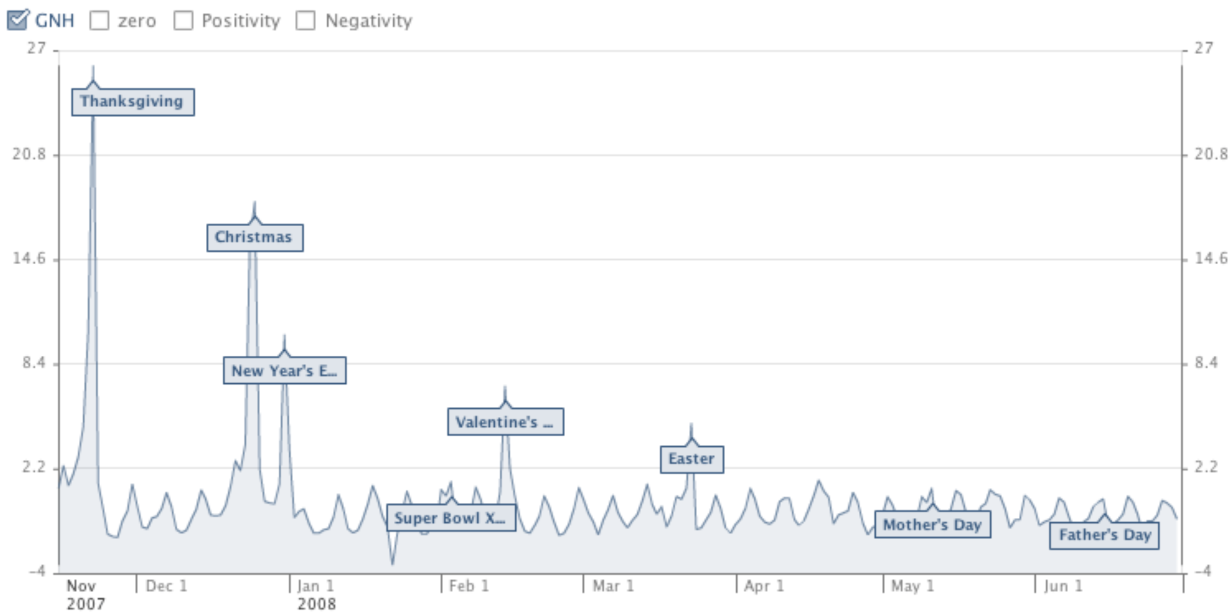

Figure 1. The Facebook Gross National Happiness index for the United States. Facebook introduced indices in 21 other countries before the project was discontinued (Zhang, 2010). Source: FlowingData.com.

daily emotional experience in the U.S., which also show high and low points around holidays and national tragedies like mass shootings (McCarthy, 2015).

Despite having some face validity, however, this use of Facebook posts is not otherwise well-validated. A preliminary analysis with over a thousand participants and an average of more than 200 status updates per participant shows only a low correlation ($r = .17$) between self-reported life satisfaction and combined LIWC ratings for positive and negative emotion (Kramer, 2010a). A separate but similar study involving the most recent 12 months of participants' status updates shows that LIWC ratings for negative emotion, but not positive emotion, correlate significantly with life satisfaction (again at a low level). The authors attribute the mixed findings to self-presentation concerns (Liu, Tov, Kosinski, Stillwell, & Qiu, 2015). Other explanations might be that LIWC performs poorly with Facebook posts, or that posts are a poor measure of life satisfaction while still performing well as an indicator of emotional experience, which is what the Facebook indices were intended to be.

Another notable study uses LIWC with over 500 million tweets from more than 2 million English-speaking individuals in over 80 countries to study daily and seasonal rhythms of positive and negative emotion (Golder & Macy, 2011), making it perhaps the largest study of such rhythms by far. Findings for positive emotion suggest it tends to peak early in the morning and again close to midnight, is higher on weekends than weekdays, and increases as days grow longer and we approach summertime. Negative emotion, on the other hand, seems to be lowest in the morning and shows less variation overall (see Figure 2). Although the study's results seem plausible and they align with some previous research on human emotional rhythms — and though the study and supporting materials represent careful work overall — like many Big Data studies, the scale of the data and its ready availability seem to override concern for validity beyond plausibility. The authors present no evidence that emotions expressed in tweets reflect emotional experience, though they note this as a limitation, and present no evidence that LIWC

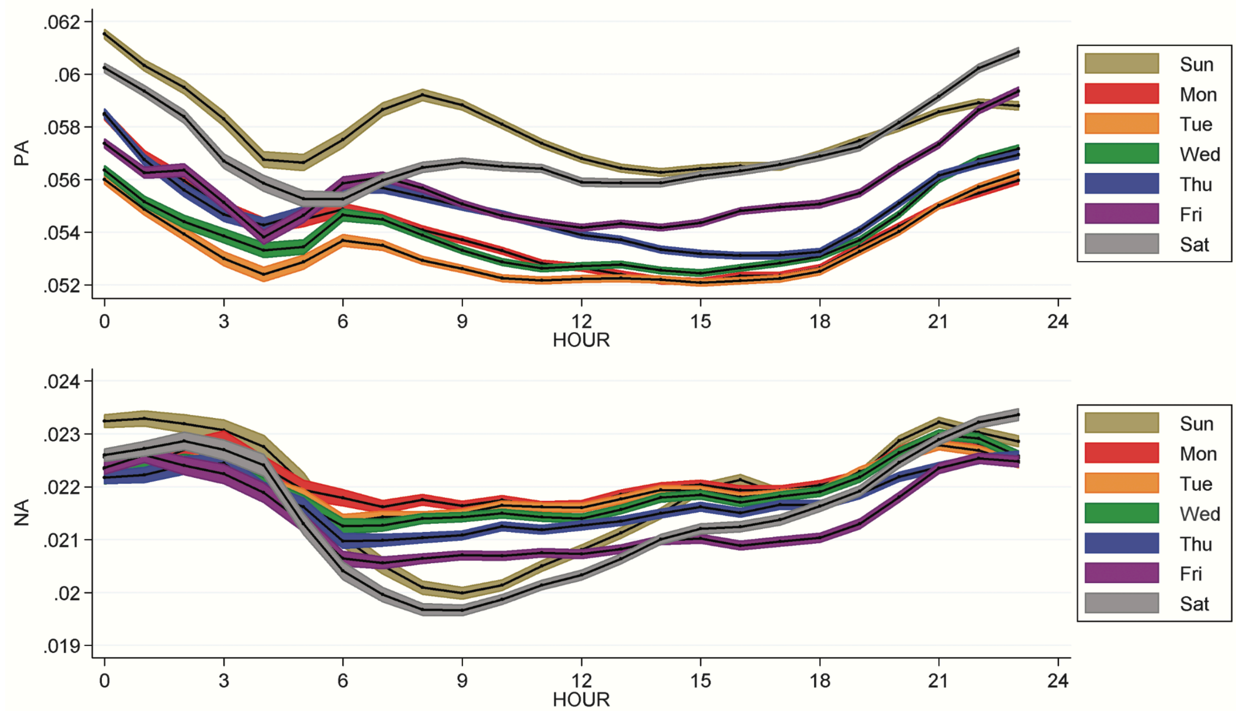

Figure 2. Hourly rhythms of positive affect (PA) and negative affect (NA) on Twitter (Golder & Macy, 2011).

works as a measure of emotion in tweets. Despite this, the study is often cited as evidence for the validity of LIWC and status updates as a measure of emotional experience (e.g. De Choudhury & Counts, 2013; Kramer et al., 2014).

A third example comes from hedonometer.org, which has operated since 2008 and is named after the indicator of momentary fluctuations in pleasure imagined by Irish economist Francis Edgeworth in the late nineteenth century (Colander, 2007). True to its name, hedonometer.org displays day-to-day variations in emotional experience in the U.S. based on a daily random sample of about 50 million English-language tweets[23], as shown in Figure 3. For sentiment analysis, Dodds et al. (2011) develop a dictionary method called Language Assessment by Mechanical Turk (LabMT), which associates frequently used words in four corpora (tweets, Google Books, *New York Times* articles and music lyrics) with ratings by workers from Amazon's Mechanical Turk service, who score each word on a 1–9 scale from sad to happy. After removing words with neutral or widely varying scores, a total of 3,686 words remain in the dictionary. In contrast, LIWC's dictionary is categorical (a word is either positive or negative) and was derived in a multi-phase judging process that began by consulting psychological scales, a thesaurus and English dictionaries (Pennebaker et al., 2015).

Dodds et al. (2011) are circumspect about the validity of hedonometer.org, assessing where the measure seems to comport with common sense and where it departs. As with the Facebook indices and Gallup surveys of emotional experience, the hedonometer peaks during Christmas, Thanksgiving and other holidays and reaches low points on days of collective mourning, with the

[23] See http://hedonometer.org/about.html.

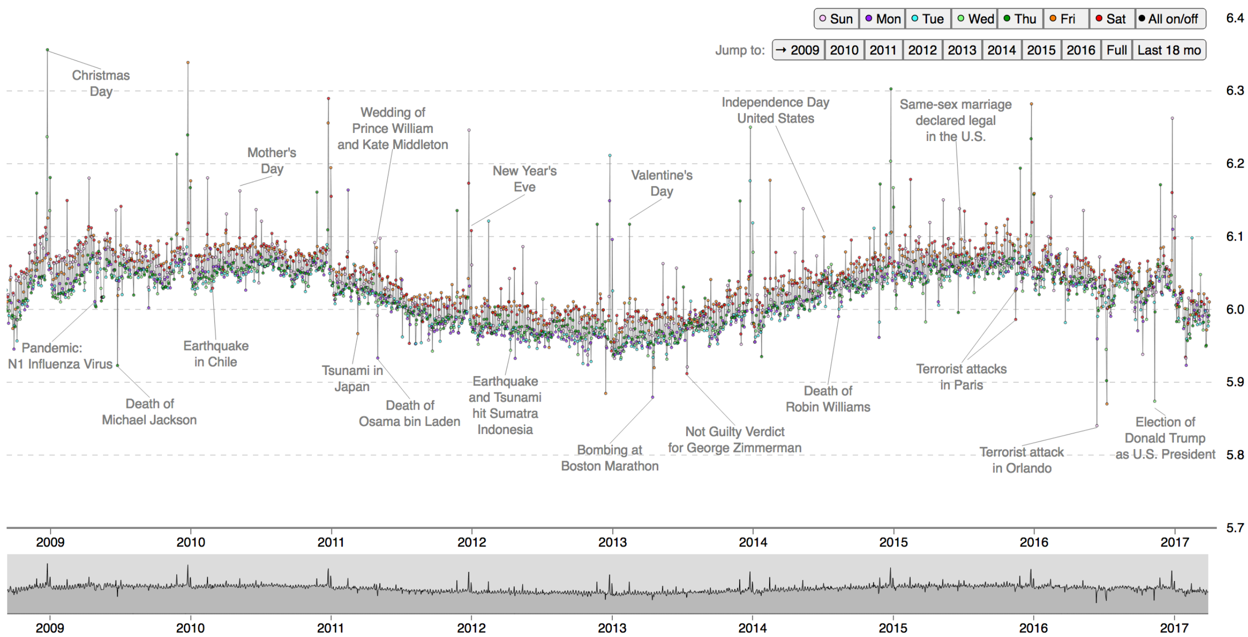

Figure 3. Daily variation in emotion on Twitter, according to hedonometer.org (Dodds et al., 2011).

mass shooting in Orlando, FL on June 12, 2016, the day after the mass shooting of police officers in Dallas, TX on July 7, 2016 and the day after Donald Trump's election on November 8, 2016 constituting its three lowest points since 2008. Michael Jackson's death again registers among the saddest days (#10) as do other celebrity deaths[24].

Dodds et al. (2011) provide a way to "look under the hood" of their method through "word shift graphs" showing the terms that most distinguish a particular day from the previous seven days. While positively-rated words like "won" and "America" showed large increases the day after Donald Trump's election, negatively-rated words like "racist" and "hate" dominated overall. Among other things, this suggests Democrats were tweeting disproportionately, which supports the finding of Mitchell and Hitlin (2013) that sentiment on Twitter can vary according to who participates. Other days show arguably erroneous readings of emotion on Twitter. As Dodds et al. (2011) note, the series finale of television show *Lost* on May 24, 2010 perhaps erroneously registered as a low point because the word "lost" is a negatively-rated term. The killing of Osama bin Laden on May 2, 2011 may represent another error as increases in negatively-rated words like "dead" and "killed" registered the day as a low point despite celebration in the U.S.

These examples illustrate clear limits to dictionary methods due to the varying meaning of words and contexts in which they are used. Other examples specific to LabMT demonstrate risk of tautology. Because the word "Christmas" is a positively-rated term, Christmas is predisposed to be a high point simply because people use the holiday's name, although Dodds et al. (2011) note that Christmas tweets are positive even if the word is excluded (in their words, Christmas tweets have high "ambient happiness"). Like the research group's work on public opinion (Cody et al., 2016), hedonometer.org demonstrates some broad validity as an indicator of well-being, correlating at a moderate level with Gallup's composite well-being measure for the 50 U.S. states

[24] See Appendix 2 or refer to http://hedonometer.org/data/word-vectors/vacc/sumhapps.csv.

(*r* = .51) and at a low level for U.S. cities (*r* = .33)[25] for the year 2011 (Mitchell et al., 2013). Dodds et al. (2011) also find support for the notion that tweets tend to focus on the present moment, with "breakfast," "lunch" and "dinner" peaking respectively during the hours of 8-9 a.m., 12-1 p.m. and 6-7 p.m. local time, for example.

A case of less circumspect work in this area might be a study of emotional experience in the workplace by De Choudhury and Counts (2013). Using LIWC with messages written by over 30,000 Microsoft employees on a non-anonymous Twitter-like internal discussion service, the authors claim to visualize the emotional experience of workers over time. Although we might expect self-presentation concerns to be at a relative maximum in the workplace, among other limitations like differences in participation rates among workers, the authors suggest the "emergence of social media as a data source for understanding affect of employees in organizations carries considerable potential" and "can provide a more effective tool for key factors and performance-relevant outcomes, such as job satisfaction, judgments, attitudinal responses, creativity, helping behavior and risk-taking, than internal surveys or other traditional methods" (De Choudhury & Counts, 2013, p. 314). Similarly, in a study of postpartum depression on Twitter, De Choudhury, Counts and Horvitz (2013a) leave to future work the task of confirming whether anyone they study has postpartum depression.

On the whole, the use of status updates to infer and visualize the emotional experiences and well-being of populations, organizations and other groups of people remains an intriguing enterprise. Such visualizations suggest an opportunity for communities to reflect on shared experiences and for policymakers and others to more easily evaluate the impact of changes in policies and services — and to assist people with mental illnesses. The way these indicators are used will affect how they are received, of course (for a cautionary tale, see Lee, 2014), and as focal points they become targets for manipulation (e.g. Metaxas & Mustafaraj, 2012).

However, the use of sentiment analysis and status updates to infer well-being is still not well-validated, particularly at the individual level. Despite LIWC's popularity, current evidence regarding its use with status updates does not suggest a robust connection to individual well-being. As noted above, work by Kramer (2010a) and Liu et al. (2015) suggests a weak and uneven association between self-reported life satisfaction and LIWC ratings of emotion in status updates. Beasley and Mason (2015) use LIWC with tweets and Facebook posts from large samples of undergraduate students (with over 200 tweets and posts on average per participant) to test for associations between LIWC ratings and individual dispositions toward positive and negative emotion (employing a dispositional form of the Positive and Negative Affect Schedule, or PANAS). Across a range of tests under varied conditions, the authors also find weak and uneven performance for LIWC with status updates, with correlations between .1–.2 for the full samples, where significant. Among subsamples of participants who say they express their feelings frequently on Twitter and Facebook, correlations are still uneven, although they are higher where significant. Outside the domain of social media, Tov, Ng, Lin and Qiu (2013) review a number of uneven results with LIWC in past studies of emotion before finding their own uneven results. Further, researchers have yet to test LIWC — or any form of sentiment

[25] Gallup's Well-Being Index composite includes measures of emotional experience, life evaluation, physical health and other measures. See http://www.well-beingindex.com.

analysis — with status updates as a measure of emotional experience specifically. Given available evidence regarding other aspects of well-being and emotion, caution seems warranted.

The Facebook experiment

Perhaps the most high-profile use of status updates as a measure of emotional experience was the Facebook experiment regarding "massive-scale emotional contagion through social networks" (Kramer et al., 2014). In addition to providing evidence for the spread of emotion through status updates, the authors also sought to rebut well-being concerns that "positive posts by friends on Facebook may somehow affect us negatively, for example, via social comparison" (p. 8790). As discussed in greater detail in the next section, a number of studies have suggested that browsing Facebook may have a negative effect on well-being, perhaps because a positivity bias in content there causes envy and other negative feelings in the viewer as a result of unfavorable social comparisons. 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 rest (see also Kramer, 2014; Schroepfer, 2014).

The study caused an uproar because Facebook had experimented with the emotions of over 600,000 users without their consent[26]. However, as I wrote on *Medium* (Panger, 2014) and later in a journal article in *Information, Communication & Society* (Panger, 2016), the study also had serious methodological problems that seemed to lead the company to draw falsely reassuring conclusions about Facebook's impact on well-being[27]. First, because the authors had shifted the proportion of one emotion (e.g. positive emotion) in News Feed without holding constant the other (e.g. negative emotion), there was simply no way for the authors to refute the idea that positive posts may cause negative emotional reactions like envy. Increasing the proportion of positive posts in News Feed, for example, logically decreases the proportion of negative posts in News Feed. With fewer negative posts in News Feed causing users to post fewer of their own negative posts, increases in envy or other negative emotions resulting from the increase in positive posts in News Feed would be canceled out in results[28].

Second, the internal validity problem caused by shifting both positive and negative emotions in News Feed at once also meant the authors had little basis to argue against explanations that are observationally equivalent to emotional contagion like mimicry or conformity, where people parrot (or feel pressured to conform to) the language or emotionality of others without experiencing it themselves (see Panger, 2016, pp. 1114-1115). Thus, the pattern the authors interpret as emotional contagion could just as easily be explained by mimicry or conformity.

Third, the authors relied upon LIWC with users' own Facebook posts to measure the effects of the experiment on emotional experience while presenting little evidence or reasoning it was valid to do so. The authors say LIWC "correlates with self-reported and physiological measures of

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[26] See http://laboratorium.net/archive/2014/06/30/the_facebook_emotional_manipulation_study_source.

[27] For example, Facebook's Chief Technology Officer Mike Schroepfer wrote, "In 2011, there were studies suggesting that when people saw positive posts from friends on Facebook, it made them feel bad. ... Our own research [indicates] that people respond positively to positive posts from their friends" (2014).

[28] Note that, technically, the authors *reduced* posts of one emotion (positive or negative) in their experimental manipulations rather than increased them. I use the reverse here because it is more intuitive, though the implications for the experiment are the same.

well-being, and has been used in prior research on emotional expression" (Kramer et al., 2014, p. 8789) and cite three studies: Golder and Macy (2011), which was discussed above, Kramer (2012), an earlier correlational study of emotional contagion, and Guillory et al. (2011), a study of emotional contagion in group chat. Unfortunately, as previously noted, Golder and Macy (2011) present little evidence of validity. Kramer (2012) also presents no evidence of validity, but cites Kramer (2010a), discussed above, which suggests in a preliminary analysis that LIWC with Facebook posts has only a low correlation with life satisfaction, to say nothing of emotional experience, which is distinct. Further, Guillory et al. (2011) find LIWC is unable to detect differences between groups imparting negative versus neutral emotions, which *undermines* the case for LIWC. Perhaps most importantly, using people's own Facebook posts to assess whether they respond negatively to positive posts in News Feed — without making a case for this use or presenting evidence of validity — ignores the range of research on self-presentation concerns in social media. Simply put, if people feel envious or inferior because of the positive posts they see on Facebook, they may not wish to broadcast that to their friends. While Facebook's interest in the impact of its services on well-being is to be encouraged, unfortunately the Facebook experiment does little to inform the debate.

Overall, given considerable interest in status updates as a measure of well-being and especially emotional experience, greater evidence of validity is needed, particularly at the individual level and particularly for emotional experience. Evidence demonstrating notions about limitations on the use of status updates is also needed, including with regard to how the choice of sentiment analysis program, like LIWC, or individual factors, such as those related to concern for self-presentation or privacy, may limit the validity of the method as a whole.

Well-being effects of browsing social media

A set of experiences

In seminal research about the effect of Facebook on well-being, Moira Burke distinguishes three forms of communication on Facebook (Burke, 2011; Burke & Kraut, 2013; Burke & Kraut, 2016). "Directed communication" refers to exchanges directed primarily at an individual, such as comments, messages, Likes and Wall posts, while "broadcasting" refers to posts shared with a wide audience and "passive consumption" refers to browsing News Feed and other people's profiles (outside this passage, I refer to passive consumption simply as "browsing"). In analysis, Burke pairs back-end data on individual communication activities with a multi-wave survey to study the relationship between Facebook use and eight validated measures of well-being, including life satisfaction, depression and social support[29].

Using multilevel regressions with a lagged dependent variable, Burke finds distinct effects for the three forms of communication. Overall, directed communication is significantly associated with *improvements* on a number of measures, including depression, social support and loneliness (Burke, 2011). 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 (Burke, 2011; Burke & Kraut, 2016). Results also show broadcasting has few

[29] All data was collected in 2011.

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 (i.e. feeling part of a broader community), and marginally higher depression and stress (Burke, 2011; Burke & Kraut, 2013). A deterioration in a composite measure of well-being is also not far from significance ($p = .102$) (Burke & Kraut, 2016).

Negative effects?
A finding that browsing News Feed and profiles on Facebook may have negative well-being effects is notable given that News 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 browsing. 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 (Burke, Kraut, & Marlow, 2011). If browsing is the primary use of Facebook, then, it is not inconceivable that the overall effect of 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 well-being (Kross et al., 2013; Hinsch & Sheldon, 2013; Sagioglou & Greitemeyer, 2014; Tromholt, 2016). Using experience sampling over two weeks with college-age participants, Kross et al. (2013) find people feel worse at one survey point the more they have used Facebook since the last survey (five surveys were sent each day) and find life satisfaction declines over two weeks with greater Facebook usage. Similarly, Sagioglou and Greitemeyer (2014) find people feel worse when experimentally assigned to use Facebook for 20 minutes compared to control activities, while Tromholt (2016) finds with a large and age-diverse Danish sample that experimentally assigning people to stop using Facebook for one week improves their emotional experience and life satisfaction compared to people assigned to continue using Facebook as normal[30]. In line with Burke's findings, Tromholt (2016) also finds that people who say they browse Facebook more often benefit more from the intervention.

To explore possible reasons people may have negative experiences with Facebook, Fox and Moreland (2014) conduct a series of focus groups with adult users and distill several themes from the discussions. Some participants said they felt tethered to Facebook and forced to use it for fear of missing out on important social information, and many reported annoyance with features like birthday notifications, which similarly create a sense of obligation to wish friends a happy birthday. 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

[30] Tromholt (2016) observes some non-compliance but bases analyses on condition (intention to treat) rather than compliance.

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).

Social comparison and envy

Other studies have proposed that Facebook dampens well-being because it encourages procrastination (Hinsch & Sheldon, 2013) or is perceived as a meaningless activity (Sagioglou & Greitemeyer, 2014). The most common explanation for the negative effect, however, is social comparison. According to the original theory proposed by Leon Festinger (1954), people are driven to evaluate themselves and do so, when few objective criteria are available, by comparison to others. 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 (1970) propose that people will often compare themselves with others simply to gauge their own self-worth. The authors find, as do a variety of subsequent studies, that comparing unfavorably with others diminishes well-being, while comparing favorably enhances it (Cash, Cash, & Butters, 1983; Salovey & Rodin, 1984; Brown, Novick, Lord, & Richards, 1992; Wheeler & Miyake, 1992; Aspinwall & Taylor, 1993; Lyubomirsky & Ross, 1997; Hagerty, 2000; Lin & Kulik, 2002; Dohmen, Falk, Fliessbach, Sunde, & Weber, 2010). 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 (Hagerty, 2000).

A substantial amount of research has suggested a connection between Facebook and unfavorable social comparison or envy, which results from unfavorable social comparison (e.g. Chou & Edge, 2012, Krasnova, Wenninger, Widjaja, & Buxmann, 2013; Lee, 2014; Panger, 2014; Tandoc, Ferrucci, & Duffy, 2014; Vogel, Rose, Roberts, & Eckles, 2014; Krasnova, Widjaja, Buxmann, Wenninger, & Benbasat, 2015; Verduyn et al., 2015). As highlighted by the focus groups in Fox and Moreland (2014), most of these studies suggest that browsing the idealized, overly-positive status updates and profiles of others can cause unfavorable social comparisons resulting in envy, other negative feelings, and reduced self-evaluations. For example, Verduyn et al. (2015) find in a week-long 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.

In two studies with German participants, Krasnova and colleagues find that viewing the travel and leisure photos of friends is a major source of envy and, in the second study, that people who experience envy while browsing Facebook are more likely to compensate by posting their own self-enhancing photos and status updates (Krasnova et al., 2013; Krasnova et al., 2015). Adding another alternative explanation to the finding of emotional contagion in the Facebook experiment (Kramer et al., 2014), Krasnova et al. (2015) suggest positive posts on Facebook may in fact cause a "self-enhancement envy spiral."[31] In this scenario, positive posts drive the production of more positive posts, but not because people feel *good* when they view positive posts.

Though most studies on social comparison have focused on the idealized, overly-positive nature of Facebook posts, Vogel et al. (2014) show in an experiment with undergraduate students that

[31] See also Smith and Kim (2007) for a discussion of envy and common behavioral responses to envy.

the number of Likes and comments others receive on their posts can be a momentary source of low self-esteem, which is notable given Facebook promotes posts with many Likes and comments (Backstrom, 2013). Vogel et al. (2014) also find, though without providing a baseline, that people report more unfavorable ("upward") social comparisons than favorable ("downward") 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, in a survey with people who are users of both Twitter and Facebook drawn from Amazon's Mechanical Turk service, I find 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" (Panger, 2014).

The literature on Facebook and well-being does not, of course, deny the obvious that people can have positive experiences browsing Facebook or using social media more broadly. People may use social media not just out of a sense of obligation or for fear of missing out, but because they find it interesting, perhaps flow-inducing (boyd, 2014, p. 80; Mauri, Cipresso, Balgera, Villamira, & Riva, 2011). Receiving written, directed communication from close friends on Facebook may improve well-being (Burke, 2011; Burke & Kraut, 2016) and friends may feel closer reading about one another's lives while browsing Facebook (Burke & Kraut, 2014). Certainly, emotional contagion remains a plausible emotional dynamic in social media.

Conclusion

Synthesizing the literature reviewed in this chapter suggests an overarching hypothesis that status updates are overly-positive, reflecting a concern for self-presentation, which in turn suggests there are limits on how valid status updates are for inferring our day-to-day emotional experience and which ultimately causes us to feel some envy and perhaps other negative emotions while browsing social media. This dissertation tests this chain of reasoning alongside alternatives like disinhibition and emotional contagion. As described over the next two chapters, I find some support for the overarching chain of reasoning, but primarily for Facebook rather than Twitter, and with important limitations.

The next chapter describes this dissertation's research questions, hypotheses and method.

Chapter 3. Research questions, hypotheses and method

In Chapter 2, we reviewed substantial though primarily indirect evidence as well as theoretical reasoning to suggest we present ourselves in an idealized, overly-positive fashion in our status updates, but also reviewed theoretical reasoning and some evidence that we are perhaps disinhibited and hostile in our status updates. We saw excitement and optimism about the use of status updates to make inferences about emotional life, but little evidence of validity and substantial reason for caution and skepticism. We also reviewed research suggesting that browsing social media, perhaps the predominant use of Twitter and Facebook, causes negative feelings like envy or, to the contrary, perhaps causes positive feelings as a result of engagement and flow, or emotional contagion from the positive status updates on the services.

Research questions and hypotheses

In light of the current state of the literature, this dissertation conducts three analyses centered around three primary research questions:

1. What is the emotional profile of the status update? In other words, how might status updates be a biased representation of emotional life?

2. What can we infer about a person's emotional life based on the emotions they express in social media? In other words, how valid are status updates as a measure of emotional life, what individual factors might strengthen or weaken validity, and what impact does sentiment analysis have on the overall validity of the method?

3. What is the emotional experience of browsing social media in day-to-day life?

To address these questions, I conduct two large experience sampling studies with diverse samples of Twitter and Facebook users and relate the resulting information about their day-to-day emotional experiences to the emotions they express in status updates over the same period. The research design consists of an opening questionnaire, one week of experience sampling and a closing questionnaire that asks participants to submit their ten most recent status updates along with emotion ratings for each. Data analysis is then circumscribed such that the two sources of data share common start and end dates. This follows a common approach (e.g. Kramer et al., 2014) to use the status updates people publish over a given period to infer their emotional experience during the same period and ensures, for example, that status updates predating the start of experience sampling are not included in analyses relating the two sources of data.

Below, I describe the hypotheses and planned analyses related to each of my primary research questions along with a brief rationale, and then discuss my research methods in more detail. Because there is little a priori reason or evidence they should be treated separately, and for simplicity, the same hypotheses and analyses are proposed for both Twitter and Facebook.

The emotional profile of the status update

We experience more positive than negative emotion in life generally (Diener, Kanazawa, Suh, & Oishi, 2015), feel especially positive in social settings generally (McAdams & Constantian, 1983; Csikszentmihalyi & Hunter, 2003; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) and preferentially regulate, suppress or hide negative emotions in social settings generally (Ekman & Friesen, 1969; Gross & John, 2003; Gross, Richards, & John, 2006; Jordan et al., 2011), although some evidence suggests we recount more negative than positive emotional episodes to others (Curci & Bellelli, 2004). In social media, as in social settings generally, people care a great deal about how they come across to others and seem to present themselves in idealized, positive terms, as reviewed in Chapter 2. However, the expressive control afforded by social media may allow people to present themselves in even more idealized and positive terms than social settings generally (Turkle, 2011; Jordan et al., 2011), while self-presentation challenges like context collapse seem to reduce the expression of negative emotions on Facebook (Lin et al., 2014), reduce self-disclosure on Facebook (Wang et al., 2016) and reduce the intimacy of self-disclosure on Twitter and Facebook (Choi & Bazarova, 2015).

Norms for positivity (Bryant & Marmo, 2012; Uski & Lampinen, 2014) and evidence regarding the use of status updates to capitalize on positive emotions (Sas, Dix, Hart & Su, 2009; Bazarova, Choi, Schwanda Sosik, Cosley, & Whitlock, 2015) seem to further enforce the positivity of status updates. Finally, though there has been no direct comparison of status updates with emotional experience to-date, Qiu et al. (2012) find people rate friends as coming across happier on Facebook overall than in real life. Because of evidence about social media specifically, and because social media is a social setting, I hypothesize the following:

> **H1:** Status updates will be more positive and less negative than day-to-day emotional experience.

Although Jordan et al. (2011) and the results of Qiu et al. (2012) suggest we present ourselves even more positively in social media than in social settings generally, I do not predict status updates — through ratings by participants of specific instances — will be more positive than the emotions we experience or convey in social settings generally because of theory and evidence regarding the disinhibitory effects of computer-mediated communication, particularly with regard to the expression of negative emotions (e.g. Suler, 2004). Thus, whether status updates are more positive than experience or expression in in-person social settings will be left as a research question:

> **RQ1:** How positive or negative are status updates compared to emotional experience or expression in in-person social settings?

Because photos of the self specifically regard the self, while status updates may otherwise be about anything, they should be especially positive. Thus, I hypothesize:

> **H2:** Status updates with photos that include the participant will be more positive than other status updates.

Though some evidence suggests we are drawn to negative news (Trussler & Soroka, 2014), perhaps norms for positivity in status updates predominate. I ask:

> **RQ2:** How positive or negative are status updates that include links to news articles?

Further, a series of studies suggests arousal or activation motivates information sharing (Berger, 2011; Berger & Milkman, 2012) and that people feel more energized, an activated emotion, shortly after posting or commenting on Facebook (Bayer et al., 2017). Thus, a direct examination of status updates should reveal them to be higher in arousal:

> **H3:** Status updates will be more activated and less deactivated than day-to-day emotional experience.

Because they are activated emotions implicated in prior literature (Berger, 2011; Berger & Milkman, 2012) or are positive emotions, or are both activated and positive, I hypothesize:

> **H4:** Status updates will be more amused, angry, anxious, in awe, enthusiastic, excited, happy, inspired, loving, proud, satisfied and surprised than emotional experience.

Finally, because they are emotions that can signify a sense of failure or inferiority that people are unlikely to broadcast to others, I hypothesize:

> **H5:** Status updates will be less ashamed, dissatisfied, envious and unhappy than day-to-day emotional experience.

Validity of inferences

Chapter 2 reviewed a number of optimistic uses of sentiment analysis with status updates as a measure of emotional experience (e.g. Kramer, 2010a; Golder & Macy, 2011; Dodds et al., 2011; De Choudhury & Counts, 2013; Kramer et al., 2014) as well as well-being more broadly, along with reasons for caution and skepticism, including evidence of low and uneven validity for LIWC with status updates as a measure of life satisfaction (Kramer, 2010a; Liu et al., 2015) and emotional disposition (Beasley & Mason, 2015). Despite these uses and reasons for caution, however, no study has yet assessed the validity of sentiment analysis with status updates as a measure of emotional experience.

This dissertation provides a test of status updates as a measure of day-to-day emotional experience. I ask:

> **RQ3:** How well do the emotions in status updates from a given date range correlate with day-to-day emotional experience over the same period?

Here, I use participants' emotion ratings of their status updates, rather than sentiment analysis, to examine the validity of status updates as a measure of emotional experience. This provides an assessment under relatively ideal circumstances (that is, without added noise from sentiment analysis). As discussed below, I ipsatize emotion ratings to mitigate spurious inflation of correlations due to response tendencies such as acquiescence. In this analysis, I also explore whether correlations between status updates and emotional experience might be higher for positive than negative emotions, or higher for emotions that are over- versus underrepresented in status updates compared to emotional experience.

Moderators
Next, I hypothesize that many individual factors will *moderate* the association between status updates and emotional experience such that status updates are a better or worse predictor of emotional experience. By including measures of dispositional traits related to concern for self-presentation or privacy, I provide a key test for the notion that such concerns might limit the validity or predictive power of status updates as a measure of emotional experience. Other individual factors provide further tests of possible limitations for the method. For example, within psychology, emotion regulation theory suggests that emotional experience and emotional expression (behavioral changes in the face, voice, gestures, posture, body movement and so on) have a modest positive relationship and that different people regulate their emotional expressions differently (Gross, John, & Richards, 2000). I include measures of expressive suppression and emotional expressivity to assess whether such dispositions also moderate the association between status updates and emotional experience.

Notably, because evidence suggests people preferentially regulate, suppress or hide negative emotions in social settings generally (Ekman & Friesen, 1969; Gross & John, 2003; Gross, Richards, & John, 2006; Jordan et al., 2011), are less likely to share negative than positive events in tweets (Choi & Toma, 2014), express less negative emotion in Facebook posts with greater context collapse (Lin et al., 2014) and express less negative emotion in Facebook posts compared to private messages (Bazarova et al., 2013), the moderators proposed below are examined with respect to *negative emotion*, as shown in Chapter 4.

Cronbach's alpha, a measure of scale reliability, is provided for each scale below in parentheses following the first mention (the value for the Twitter sample appears first).

Self-monitoring
Self-monitoring refers to "differences in the extent to which individuals can and do monitor their self-presentation, expressive behavior, and non-verbal affective display" in the pursuit of social appropriateness and social approval. Whereas the behavior of low self-monitors seems "controlled from within by their affective states," the behavior of high self-monitors is "molded to fit the situation" (Snyder, 1974). High self-monitors are more likely to hide their glee and victory gestures, for example, when the person they have just vanquished is in the same room with them — as opposed to when they are alone — because hiding such gestures is more socially appropriate (Friedman & Miller-Herringer, 1991). Thus, because self-monitoring refers to the extent to which individuals attend to self-presentation, I hypothesize:

> **H6:** Self-monitoring will weaken the association between status updates and emotional experience.

Though the Self-Monitoring Scale (25 items, α = 0.73, 0.74) was designed to measure individual differences in self-monitoring as a unidimensional construct (Snyder, 1974), factor analyses have yielded multiple factors (Briggs, Cheek, & Buss, 1980; Snyder & Gangestad, 1986; John, Cheek, & Klohnen, 1996). I follow the recommendation of John et al. (1996) and administer the full scale, scoring all items as well as an Other-Directedness subscale (10 items[32], α = 0.69, 0.71),

[32] I drop one of the 11 items of the Other-Directedness subscale (Briggs et al., 1980) because, for both the Twitter and Facebook samples, it has a low correlation in the wrong direction with the rest of the items in the subscale. Item 23 (as numbered in the full scale) is dropped.

said to “emphasize pleasing others, conforming to the social situation, and masking one’s true feelings” (Briggs et al., 1980) and found in one study to account for most of the scale’s moderating effect on the attitude-behavior association (Baize & Tetlock, 1985). Sample items from the Other-Directedness subscale include, “In order to get along and be liked, I tend to be what people expect me to be rather than anything else” and “Even if I am not enjoying myself, I often pretend to be having a good time” (Snyder, 1974).

Social desirability
Similar to self-monitoring, social desirability reflects a concern for self-presentation and refers to a need to “obtain approval by responding in a culturally appropriate and acceptable manner” (Crowne & Marlowe, 1960). As demonstrated in studies of written self-disclosure (Burhenne & Mirels, 1970; Brundage, Derlega, & Cash, 1977), individuals high in social desirability engage less often in self-disclosure to “protect their vulnerable self-esteem” (Cozby, 1973). Thus, I hypothesize that:

> **H7:** Social desirability will weaken the association between status updates and emotional experience.

Like the Self-Monitoring Scale, the Marlowe-Crowne Social Desirability Scale (33 items, α = 0.79, 0.85) developed by Crowne & Marlowe (1960) yields more than a single factor in factor analyses. Paulhus (1991) proposes a two-factor model of social desirability comprising self-deceptive positivity, “an honest but overly positive self-presentation” and impression management, “self-presentation tailored to an audience” and notes that the Marlowe-Crowne scale loads on both, though to a greater extent on impression management. Because no subscale or alternative measure of social desirability seems ideal (Leite & Beretvas, 2005), I administer and score the Marlowe-Crowne scale as-is. Scale items assess “culturally acceptable and approved behaviors which are, at the same time, relatively unlikely to occur,” and include statements like, “Before voting I thoroughly investigate the qualifications of all the candidates” (Crowne & Marlowe, 1960).

Conscientiousness
Conscientiousness is a personality trait in the leading personality taxonomy known as the Big Five, and refers to “socially prescribed impulse control that facilitates task- and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing and prioritizing tasks” (John, Naumann, & Soto, 2008). Because conscientious people are more likely to regulate their impulses in a socially prescribed manner, are more likely to follow norms and are more cautious, I hypothesize:

> **H8:** Conscientiousness will weaken the association between status updates and emotional experience.

I administer the 44-item Big Five Inventory (John, Donahue, & Kentle, 1991) and present hypotheses related to other Big Five traits below. Sample items for the Conscientiousness subscale (9 items, α = 0.82, 0.85) include, “I am someone who…” “Is a reliable worker” and “Can be somewhat careless” (reversed).

Concern for information privacy
Concern for information privacy relates to individual concern about the collection, handling, accuracy and secondary use of personal information by companies (Smith, Milberg, & Burke, 1996). Because people who are so concerned may be more careful in their disclosures, I hypothesize that:

> **H9:** Concern for information privacy will weaken the association between status updates and emotional experience.

Eight of 15 items from the Concern for Information Privacy Instrument (Smith et al., 1996), the two highest-loading items from each of the instrument's four subscales, are administered[33]. The resulting shortened instrument (8 items, $\alpha = 0.80, 0.87$) provides a rough measure of privacy concern with respect to companies. Sample items include, "It bothers me to give personal information to so many companies" and "Companies should never sell the personal information in their computer databases to other companies" (Smith et al., 1996).

Posting concerns
A short Posting Concerns scale (3 items, $\alpha = 0.69, 0.86$) from Vitak (2012) assesses privacy concerns related to posting on Facebook, with items like, "I am careful in what I post to Facebook because I worry about people who are not my Friends seeing it." I adapt these items for use with Twitter as well, so the above statement reads, "I am careful in what I [post to Facebook, tweet] because I worry about people I don't know seeing it." This scale provides a specific measure of privacy concerns related to status updates and was found to predict lower self-disclosure on Facebook (Vitak, 2012). Thus, I hypothesize:

> **H10:** Posting concerns will weaken the association between status updates and emotional experience.

Content impression management
A related Content Impression Management scale adapted from Vitak (2015) assesses how often people take steps to manage their self-presentation with respect to their Facebook posts. I modify 3 of the scale's 6 original items for use with Twitter, resulting in a shortened, adapted scale (3 items, $\alpha = 0.73, 0.74$). One item was not applicable to Twitter and three items regarding deleting status updates were combined into a single item. Thus, the original item, "Change the wording of a status update to avoid angering some of your Facebook friends" was adapted to read, "Change the wording of a [Facebook post, tweet] to avoid upsetting some of your [friends, followers]" ("upsetting" was also substituted for "angering" to broaden the item). Vitak's content impression management scale is associated with an 11-item scale of privacy concerns on Facebook (Vitak, 2015). Because of this association, and because taking active steps to manage one's self-presentation in status updates should weaken the association between status updates and emotional experience, I hypothesize:

> **H11:** Content impression management will weaken the association between status updates and emotional experience.

[33] These are items J/E, F/H, K/M and N/D (Smith et al., 1996).

Expressive suppression
In emotion regulation theory, expressive suppression involves inhibiting the expression of an emotion as it is being experienced (e.g. keeping a "poker face" while holding a great hand) (Gross & John, 2003). Because a general disposition to suppress the expression of emotions should weaken the association between expression and experience, I hypothesize:

> **H12:** Expressive suppression will weaken the association between status updates and emotional experience.

I administer the Suppression subscale (4 items, α = 0.75, 0.81) of the Emotion Regulation Questionnaire (Gross & John, 2003). A sample item is, "I control my emotions by *not expressing them*" (emphasis retained from original).

Depression
Depression is thought to be a self-reinforcing cause and possible result of low self-disclosure (Kahn & Hessling, 2001; Rude & McCarthy, 2003; John & Gross, 2004; Barr, Kahn, & Schneider, 2008). Depressed individuals have a greater discrepancy between their emotional experience and third-party ratings of their expression (Mauss et al., 2011), are more likely to suppress their emotions and lack a sense of authenticity in their expressions (Gross & John, 2003; see also Reinecke & Trepte, 2014), and are less likely to engage in emotional self-disclosure (Kahn & Garrison, 2009). Low self-disclosure may also be socially-reinforced because of a "dilemma of distress disclosure," wherein the mental health benefits of self-disclosure are denied the distressed because people tend to avoid those who appear to be suffering (Coates & Winston, 1987). Such a dilemma may not exist in reality on Facebook, however, because although people who are depressed *believe* they are less likely to receive support on Facebook, evidence suggests they are *more* likely to receive support when they disclose negative emotions on Facebook (Park et al., 2016; see also Burke & Develin, 2016). A positivity bias in Facebook posts, though, may reinforce a perception that negative disclosures are unwelcome. Because depression is associated with experience-expression discrepancies, expressive suppression and lower self-disclosure, I hypothesize:

> **H13:** Depression will weaken the association between status updates and emotional experience.

I assess depression in the opening and closing questionnaires with the CESD-R scale (20 items, α = 0.93/0.94, 0.94/0.94), a version of the Center for Epidemiologic Studies Depression scale that has been revised to reflect a more current definition of major depression (Eaton, Smith, Ybarra, Muntaner, & Tien, 2004; see also Van Dam & Earleywine, 2011; Radloff, 1977). Sample items include, "Nothing made me happy" and "I wished I were dead."

Neuroticism
Neuroticism is a Big Five personality trait that contrasts "emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad and tense" (John et al., 2008). While states of anxiety may motivate verbal exchange and information sharing (Rimé, 2009; Berger, 2011), anxious and depressed individuals are less likely to engage in emotional self-disclosure (Kahn & Garrison, 2009). Further, although one study prior to the social media era suggests neurotic individuals are better able to express their true selves on the

Internet (Amichai-Hamburger et al., 2002), a study of self-disclosure on Facebook finds individuals *low* in neuroticism disclose a greater breadth of information (Hollenbaugh & Ferris, 2014). On balance, I hypothesize:

> **H14:** Neuroticism will weaken the association between status updates and emotional experience.

Sample items for the Neuroticism subscale (8 items, α = 0.84, 0.88) of the Big Five Inventory (John et al., 1991) include, "I am someone who…" "Is depressed, blue" and "Worries a lot."

Negative expressivity
In contrast to expressive suppression, negative expressivity refers to individual differences in the tendency to express negative emotional impulses. The Negative Expressivity subscale (6 items, α = 0.76, 0.75) of the Berkeley Expressivity Questionnaire (Gross & John, 1995) has been shown in two studies to moderate the relationship between emotional expression on the one hand, and both emotional disposition and emotional experience on the other (Gross et al., 2000). Sample items include, "It is difficult for me to hide my fear" and "Whenever I feel negative emotions, people can easily see exactly what I'm feeling." I hypothesize:

> **H15:** Negative expressivity will strengthen the association between status updates and emotional experience.

Stress coping strategies
Similarly, people who tend to cope with stress by venting or seeking emotional support may turn to social media to do so. Thus, I hypothesize:

> **H16:** Negative venting will strengthen the association between status updates and emotional experience; and

> **H17:** Emotional support seeking will strengthen the association between status updates and emotional experience.

Measures of Venting (2 items, Spearman Brown = 0.79, 0.76) and Emotional Support (2 items, Spearman Brown = 0.89, 0.91) are taken from the Brief COPE (Carver, 1997). A sample venting item is, "I say things to let my unpleasant feelings escape," and a sample emotional support item is, "I get emotional support from others."

Extraversion
Extraversion is a Big Five personality trait that entails "an energetic approach toward the social and material world, and includes traits such as sociability, activity, assertiveness, and positive emotionality." At the opposite end of this dimension are introverts, who are shy, reserved and withdrawn (John et al., 2008). Some evidence suggests extraverts engage in greater self-disclosure generally (Cozby, 1973) and that the positive emotion associated with extraversion promotes more intimate and more varied self-disclosure (Forgas, 2010), while shyness, social anxiety and social avoidance are linked to lower self-disclosure (Reno & Kenny, 1992; Meleshko & Alden, 1993).

Does this translate to social media? Studies prior to the social media era suggest shy people self-disclose more readily in computer-mediated communication (Stritzke, Nguyen, & Durkin, 2004) and that introverts are better able to express their true selves on the Internet (Amichai-Hamburger et al., 2002). However, a study of self-disclosure on Facebook indicates extraverts engage in more intimate, personal self-disclosure on Facebook (Hollenbaugh & Ferris, 2014). On balance, I hypothesize:

> **H18:** Extraversion will strengthen the association between status updates and emotional experience.

Sample items for the Extraversion subscale (8 items, α = 0.87, 0.89) of the Big Five Inventory (John et al., 1991) include, "I am someone who…" "Is outgoing, sociable" and "Is talkative."

Life satisfaction
Although life satisfaction is not often the focus of research on self-disclosure, it is occasionally implicated in results, which indicate a positive relationship with self-disclosure (Mauss et al., 2011; Arslan, Hamarta, & Uslu, 2010) and a negative relationship with expressive suppression (Gross & John, 2003). Tentatively, I hypothesize:

> **H19:** Life satisfaction will strengthen the association between status updates and emotional experience.

I administer the Satisfaction with Life Scale (5 items, α = 0.88/0.89, 0.92/0.92) in the opening and closing questionnaires. Sample items include, "In most ways my life is close to my ideal" and "The conditions of my life are excellent" (Diener, Emmons, Larsen, & Griffin, 1985).

Openness and agreeableness
Openness and agreeableness, the two remaining Big Five personality traits, are not strongly linked with self-disclosure in prior research. Openness describes "the breadth, depth, originality, and complexity of an individual's mental and experiential life," with more open individuals exhibiting greater curiosity, aesthetic sensitivity and attentiveness to inner feelings (John et al., 2008). While evidence suggests no correlation between openness and negative expressivity (Gross & John, 1995), attentiveness to inner feelings implies some potential for emotional disclosure and Hollenbaugh and Ferris (2014) find openness predicts a greater breadth of self-disclosure on Facebook. Tentatively, I hypothesize:

> **H20:** Openness will strengthen the association between status updates and emotional experience.

Agreeableness contrasts "a prosocial and communal orientation toward others with antagonism and includes such traits as altruism, tender-mindedness, trust and modesty" (John et al., 2008). Because trust facilitates self-disclosure (Ignatius & Kokkonen, 2007), and agreeable individuals are straightforward, communal and trusting, we might expect them to self-disclose more freely and openly. However, they are also modest, and evidence suggests no correlation between agreeableness and negative expressivity (Gross & John, 1995). I ask:

> **RQ4:** Does agreeableness moderate the association between status updates and emotional experience?

Sample items for the Openness subscale (10 items, α = 0.82, 0.85) of the Big Five Inventory (John et al., 1991) include, “I am someone who…” “Is inventive” and “Likes to reflect, play with ideas.” Sample items from the Agreeableness subscale (9 items, α = 0.76, 0.84) include, “I am someone who…” “Starts quarrels with others” (reversed) and “Is generally trusting.”

Gender
Though gender is the most heavily studied demographic factor with respect to self-disclosure generally, a meta-analysis suggests women disclose only slightly more than men on average (Dindia & Allen, 1992). However, intimate self-disclosures are usually seen as more appropriate for women, they tend to be more skillful communicators, and they tend to be more concerned with issues of intimacy than men (Ignatius & Kokkonen, 2007). Women also say they are more emotionally expressive on average (Gross & John, 1997), while men say they engage in greater expressive suppression (Gross & John, 2003) and may engage in more “boasting” communication around other men (McGuire et al., 1985). On Facebook, women engage in more self-disclosure than men on average (Wang et al., 2016) and discuss more personal as opposed to abstract topics (Wang, Burke, & Kraut, 2013), while men use more positive and fewer negative emotion annotations in their Facebook posts (Burke & Develin, 2016). Given evidence for gender differences in emotional expression and self-disclosure, I hypothesize:

> **H21:** Women will exhibit a stronger association between status updates and emotional experience than men.

Age
Age is not often linked to self-disclosure in the literature, but some evidence suggests people engage in less expressive suppression as they age (John & Gross, 2004). On Facebook, age is associated with higher self-disclosure (Wang et al., 2016). Tentatively, I hypothesize:

> **H22:** The association between status updates and emotional experience will strengthen with age.

Income and education
As with age, income and education are not often linked to self-disclosure in the literature. For example, there is little evidence that having a college degree is associated with self-disclosure (Rimé, 2009), although people who are more highly educated tend to share news articles more often on Facebook (Baek, Holton, Harp, & Yaschur, 2011), which perhaps suggests they engage in relatively fewer personal disclosures. I ask:

> **RQ5:** Does income or education moderate the association between status updates and emotional experience?

Features of identity and publicness
As discussed in Chapter 2, anonymity in computer-mediated communication is thought to be disinhibiting and evidence suggests people engage in greater frequency of self-disclosure online when visual and other cues to identity are absent (e.g. Nguyen, Bin, & Campbell, 2012; Joinson, 2001). Therefore, I hypothesize:

H23: People who identify themselves by their full names in their profiles or who feature themselves in their profile photos will exhibit a weaker association between status updates and emotional experience.

In addition, people who are more "public" in social media because of their audience privacy settings or because of the size of their friend and follower networks may engage in less self-disclosure. Indeed, network size is associated on Facebook with lower self-disclosure (Wang et al., 2016), less use of emotion annotations (Burke & Develin, 2016) and the expression of more positive emotions, mediated by a stronger need for attention to self-presentation (Lin et al., 2014). I hypothesize:

H24: Network size and a "public" privacy setting will weaken the association between status updates and emotional experience.

I rely on self-reports for these four items as participants are likely to be familiar with or easily able to locate these details. For example, Burke et al. (2010) finds a correlation of .96 between self-reports of network size and actual values. Facebook has also recently drawn attention to audience privacy settings through a "privacy checkup" tool (Underwood, 2014).

Status updates per day

Finally, as a basic matter, the number of times a day, on average, a person publishes status updates should affect how valid their status updates generally are for inferring their day-to-day emotional experience. I hypothesize:

H25: Publishing more status updates per day will result in a stronger association between status updates and day-to-day emotional experience.

Status updates per day is calculated as the number of status updates included in the circumscribed date range for each participant, divided by the number of days in the range.

Sentiment analysis

Next, I investigate the impact of sentiment analysis on the overall validity of status updates as a measure of emotional experience. Although the emotions participants express in status updates may have a robust association with their day-to-day emotional experience, sentiment analysis will increasingly dissipate this association the worse it performs as a measure of the emotions participants express in status updates. Here, I test the validity of the sentiment analysis program Linguistic Inquiry and Word Count (LIWC), which is popular but poorly validated for use with status updates. As described in Chapter 2, LIWC is a dictionary method, which means it measures emotion in text by counting the words designated as emotion words in a pre-specified dictionary and then dividing by the total number of words in the text. I use the most recent 2015 version of LIWC, which includes 620 words thought to signify positive emotion and 744 words thought to signify negative emotion. The negative emotion category itself consists of separate anger, anxiety and sadness categories (Pennebaker et al., 2015). I ask:

RQ6: How well do LIWC ratings correlate with participant ratings of emotion in status updates?

Testing the overall validity of LIWC with status updates as a measure of emotional experience, I ask:

> **RQ7:** How well do LIWC ratings of the emotion in status updates from a given date range correlate with emotional experience over the same period?

Additionally, I test the association between LIWC with status updates and life satisfaction, depression, extraversion and neuroticism. Extraversion and neuroticism are considered to be the affective personality dimensions (Gross & John, 1995).

The browsing experience

As reviewed in Chapter 2, prior research suggests Facebook as a whole may undermine well-being (e.g. Tromholt, 2016), including emotional experience (e.g. Kross et al., 2013), and that browsing Facebook may specifically be to blame due to unfavorable social comparison and envy (e.g. Burke, 2011; Verduyn et al., 2015). On the other hand, some researchers (boyd, 2014, p. 80; Mauri et al., 2011) propose that social media is successful because it induces flow, 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 less boredom (Hektner, Schmidt, & Csikszentmihalyi, 2007, 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 (Mauri et al., 2011).

Although the evidence seems to weigh in favor of a negative emotional effect, I do not make predictions about the overall emotional experience of browsing social media because of the plausibility of arguments in favor of flow and emotional contagion, because social media feeds are perhaps a form of social setting (which generally bring positive emotions), and because of social media's success. Thus, I ask:

> **RQ8:** How much positive or negative emotion do we experience while browsing social media, on average, compared to emotional experience as a whole? And:

> **RQ9:** How much activation or deactivation do we experience while browsing social media, on average, compared to emotional experience as a whole?

By "emotional experience as a whole," I mean all day-to-day emotional experiences except browsing social media. I also collect data about the emotional experience of in-person social interactions and other device uses (aside from just social media use), and examine these as additional comparators for the browsing experience, given that social media can be considered a form of social setting and is a form of device use. Recognizing that multiple emotional dynamics may characterize the browsing experience, I also test for specific effects — envy and flow experience — that may not be reflected in overall measures. I hypothesize:

> **H26:** Browsing social media will be characterized by greater envy compared to emotional experience as a whole; and

H27: Browsing social media will be characterized by greater flow experience — enthusiasm, excitement and interest, and lower boredom — compared to emotional experience as a whole.

Methodology

The research design of this dissertation 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 the week, and the opening and closing questionnaires include the dispositional, demographic and other measures discussed above. The closing questionnaire also collects each participant's 10 most recent status updates along with their ratings of the emotions each status update expresses.

Ideally, because recruitment messages specifically target people who tweet or post on Facebook around 1-2 times per day, 10 status updates should encompass nearly the full week of experience sampling. A rate of 1-2 times per day is also likely higher than the rate of the median user of Twitter and Facebook[34], which provides a favorable test of the validity of status updates as a measure of emotional experience, assuming validity improves with more status updates[35]. A standard of ten status updates was also chosen to limit the burden on participants, ensure an equitable burden, and remove any incentive to under- or overreport status updates. Where ten status updates do not encompass the full week, participants are invited to optionally submit an additional 5 status updates, comprising their eleventh through fifteenth most recent status updates. Where status updates still do not encompass the full week, or they exceed one week, study data is circumscribed so that status updates and experience sampling share common start and end dates, as further detailed in Chapter 4.

Experience sampling

The experience sampling method (ESM), also referred to as ecological momentary assessment (EMA), is a method employed throughout the psychological and health sciences to investigate and understand daily life, especially emotional experience (Csikszentmihalyi & Larson, 1987; Hektner, Schmidt, & Csikszentmihalyi, 2007; Scollon, Kim-Prieto, & Diener, 2009; Mehl & Conner, 2012). Experience sampling studies typically last 1-2 weeks and involve signaling participants 3-8 times per day to complete a brief survey known as the experience sampling form (ESF). Depending on the study, this form can be extremely brief, with just a handful of items, or more involved, with between 30 and 50 items (e.g. see sample forms in Csikszentmihalyi & Larson, 1987 and Hektner et al., 2007). Today, studies use text messages or push notifications to signal participants and allow them to complete the ESF with reply texts (suitable for very short

[34] Although little public information is available about how often the average or median social media user publishes status updates, a rate of 1-2 times per day roughly matches the median rate of less than 50 posts per month in Burke et al. (2011), whose participants were more active than the typical Facebook user (they spent about three times longer on Facebook than the average user each day). More recently, an article in *The Information* regarding a decline in posting on Facebook claims only around 39% of Facebook's weekly active users post something "original" during the week, meaning a personal announcement or photo. When other content like news articles is counted, the number rises to 57%. People who post "original" content do so about five times per week, on average (Efrati, 2016).

[35] A more favorable test is conservative with respect to a starting position of skepticism regarding validity.

ESFs), through a survey link or through an app on their smartphone. Participants are typically signaled at random times during their waking hours.

Notably, experience sampling asks participants about the present moment — how they are feeling, what they are doing, whom they are with and so on — as they are signaled. Signaling randomly throughout the day over a period of days thus provides a measure of emotional experience, both for the period as a whole as well as in specific contexts, such as while engaged in a particular activity or in the company of particular people.

The most important strength of the experience sampling method lies in its effort to circumvent the limitations of memory by inquiring about the present moment rather than the past. In contrast to retrospective or dispositional measures, experience sampling should provide a more accurate and less biased measure of emotional experience. Synthesizing a large literature on memory and self-reports of emotion, Robinson and Clore (2002) propose four types of information people access when reporting on their emotions: *experiential knowledge*, *episodic memory*, *situation-specific beliefs* and *identity-related beliefs*. When asked about the present moment, people can introspect and report directly on their *experiential knowledge* (e.g. current thoughts, feelings, sensations, pain, stress, sleepiness and so on), which decays rapidly over time. Moving away from the present moment, people begin to rely on *episodic memory* to reconstruct the details of events, which can introduce biases specific to episodic memory, such as the peak-end effect described in Chapter 1 (Redelmeier & Kahneman, 1996). After a week or more, retrospective measures then tend to access semantic knowledge about how we typically feel in situations (*situation-specific beliefs*) or how we feel in general (*identity-related beliefs*) (Robinson & Clore, 2002; Conner & Barrett, 2012).

While retrospective measures can obviously show validity for what they are intended to measure, they are less accurate as a measure of emotional experience than experience sampling and introduce measurable biases often related to identity and stereotypes (Robinson & Clore, 2002). For example, men and women report robust and sometimes large differences in emotionality with retrospective measures, in alignment with stereotypes, but show modest or no differences with measures of immediate experience. Thus, men and women report large differences in dispositional empathy, but exhibit negligible differences in empathetic distress in response to specific stimuli (Eisenberg & Lennon, 1983). Asian Americans underestimate their happiness in retrospective reports, whereas European and Hispanic Americans overestimate their happiness (Scollon, Diener, Lucas, Oishi, & Biswas-Diener, 2001), and beliefs about how we will feel on our birthdays differ from how we actually feel (Wilson, Lisle, Kraft, & Wetzel, 1989).

Because the signaling in experience sampling interrupts people randomly in the course of daily life to report on their momentary experiences, it provides a high level of ecological validity and mitigates selection biases that occur in memory and might occur if people were asked to voluntarily report on their emotional experiences at times of their own choosing. However, these interruptions are also a source of limitation for experience sampling, because they are intrusive. While any voluntary study can encounter issues with volunteer or attrition rates that might impact the generalizability of findings, these issues are thought to be a particular risk for experience sampling because of this intrusiveness. Low signal response rates can also place the generalizability of findings at risk.

These issues are generally manageable limitations. Attrition can be prevented by helping participants anticipate what to expect during the study period and by troubleshooting when problems arise (for example, with receiving or responding to signals), and problems with signal response rates can be prevented by choosing a signal rate that is balanced against the length of the ESF[36]. Still, we might expect more women to sign up for a study of emotion, due to identity-related beliefs, and more agreeable and conscientious people to have higher signal response rates (for more on managing these issues, refer to Chapter 3 in Hektner et al., 2007, pp. 31-59).

Another methodological concern with experience sampling is reactivity, which is the general concept that monitoring behaviors or experiences might change them (Barta, Tennen, & Litt, 2012). For example, a highly intrusive protocol might increase negative emotions or, conversely, the opportunity to reflect on one's behaviors and experiences might have a therapeutic effect. Indeed, some might note the similarity between experience sampling and therapeutic interventions designed to change a behavior by tracking and bringing awareness to it. However, such interventions often must be accompanied by extensive coaching and support to have any effect (e.g. Spring et al., 2013). A study of pain perception also finds that, although most participants believed reporting on their pain three times a day for two weeks affected their pain, their own pain ratings did not support their retrospective impressions and there was no other evidence of reactivity (Aaron, Turner, Mancl, Brister, & Sawchuk, 2005).

Although the literature on reactivity in experience sampling is not extensive, reassuringly, most studies show no or only modest reactivity (Barta et al., 2012). In general, evidence suggests experience sampling studies are at higher risk for reactivity when people are in a therapeutic context (i.e. are instructed to change their experiences), when they are motivated to change their experiences, when they are provided feedback or a visualization of their experiences, and when they are asked to monitor a single experience rather than several (Barta et al., 2012). For example, Connor and Reid (2012) find that asking depressed people to report on how happy they feel several times a day makes them more unhappy over time. I follow these lessons in my research design by avoiding any suggestion of therapy or desirability of change, by providing little in the way of visualization of data,[37] and by asking about an array of emotions, both positive and negative. I also test for reactivity by comparing scores for life satisfaction and depression in the opening and closing questionnaires.

For some researchers, the use of self-reports in experience sampling may be perceived as a further limitation of the method. However, there appears to be consensus among psychologists that self-reports provide the best access to conscious or subjective experience, which is generated in the brain by complex systems, sensations, cognitions, motivations and so forth (Robinson & Clore, 2002; Russell, 2003, p. 154; Barrett, 2004, p. 266; Hektner et al., 2007, pp. 9-10; Scollon et al., 2009, p. 171; Barrett, 2009).

Despite these possible limitations, experience sampling shows considerable reliability and validity. To start, the first half of the experience sampling period tends to have a moderate to high correlation with the second half, or good split-half reliability (Hektner et al., 2007, pp. 115-

[36] Following this guideline, I chose a lower, less demanding signal rate (four times per day) to help offset the longer, more demanding experience sampling form I employ (see Hektner et al., 2007, pp. 31-59).
[37] In the Android but not iOS versions of Paco, the experience sampling app I employ, it is possible for participants to view their study data. Again, however, no aggregation or visualization is provided.

116). Findings from experience sampling studies demonstrate good face validity, with people reporting greater happiness when they eat or have sex than when doing chores or commuting to work (Hektner et al., 2007, pp. 9-10; Killingsworth & Gilbert, 2010). Experience sampling picks up on aspects of ordinary life that other methods do not, such as time spent daydreaming or the decline in mood working mothers may experience when they come home from work and start the "second shift" of making dinner and caring for the children (Hektner et al., 2007, p. 156, 197). Experience sampling captures moments that might be seen as inconvenient to interrupt, embarrassing or private, like sex (pp. 105-106). Experience sampling also shows good "situational validity," which refers to the internal logic of reports. People report conversation as their main activity when in the company of others and not when they are alone, and they report common activities at predictable times and in predictable places (e.g. personal grooming in the morning and TV watching at home) (p. 111).

Experience sampling also shows convergent validity with physiological measures. Reports of being "active," for example, correlate with readings from heart rate and activity monitors (Hoover, 1983), feeling "rushed," "tense" or "angry" correlates with blood pressure (Van Egeren & Madarasmi, 1992), and daily hassles are reported twice as often and seen as more stressful during the two days prior to a migraine compared to other days (Sorbi, Honkoop, & Godaert, 1996). Many studies also demonstrate a correlation between reports of stress or negative emotion and cortisol (van Eck & Nicolson, 1994; Smyth et al., 1998; Adam, 2005; Steptoe, Gibson, Hamer, & Wardle, 2007; Sonnenschein et al., 2007; Entringer et al., 2011). Some studies specifically note finding no evidence of a correlation between retrospective reports and cortisol (Steptoe et al., 2007; Sonnenschein et al., 2007; Entringer et al., 2011).

Finally, it is perhaps worth briefly noting the differences between experience sampling and status updates as potential measures of emotional experience. Experience sampling is likely to be more valid at the individual level because it is confidential, while status updates are not. It is not often we see people discussing how much they enjoyed their most recent sexual encounter on Facebook, for example. Experience sampling also signals individuals randomly multiple times per day, while individuals volunteer status updates at times of their own choosing, which implies potentially substantial momentary selection bias and sometimes means no status updates are published on a given day or for days at a time. Experience sampling is also self-reported, while status updates generally require some form of sentiment analysis, which introduces noise, as discussed in Chapter 2. However, as discussed in Chapter 2, status updates are advantaged by their abundance and by the ability to passively collect them, which makes them an exciting source of data if they show validity and if their limitations are properly understood. Status updates also seem suitable as a measure of emotional experience because they appear to predominantly reflect what is presently on our minds, as when tweets mentioning "breakfast," "lunch" and "dinner" peak during the times we would expect (Dodds et al., 2011). Prompts of "What's happening?" and "What's on your mind?" for Twitter and Facebook, respectively, also seem to encourage a focus on the present moment.

Despite the clear desirability of immediate self-reports of the emotions expressed in status updates, I collect self-reports for status updates only at the end of the experience sampling week. Aside from the difficulty of building and testing a system to collect immediate reports, it may be overly burdensome to require these during the week on top of experience sampling, especially for people who publish status updates most frequently, and may cause participants to think twice before tweeting or posting, potentially biasing results. Whereas the random signals of experience sampling are "required," participants would be free to choose whether they publish a status update — triggering a report — or not in the first place. In addition, asking participants to report their emotions in status updates and their emotional experiences during the same period may invite them to make explicit comparisons between the two.

However, two factors mitigate the potential error introduced by the retrospective reports for status updates. First, because status updates published before the start of the experience sampling period are discarded in analyses relating the two data sources, status updates in analyses are no more than one week old, except in two cases where noted. Second, participants are guided to refer to status updates individually as they rate them, providing a memory aid. Rating specific instances of social media behavior in this way likely improves on studies which ask for general impressions only, thus accessing situation-specific beliefs (e.g. Qiu et al., 2012).

Experience sampling and status update forms
During the week they participate in the study, participants are signaled 4 times per day to complete a 43-item experience sampling form (ESF), with 37 items inquiring about their current emotional experience and six items inquiring about their current activity; whereabouts; whether they are interacting with others in person; what feeling they are conveying, if so; and whether they are using Twitter or Facebook or doing something else on a device (i.e. "computer, smartphone or tablet"). When indicating they are using Twitter or Facebook, participants can choose to say they are "talking to someone on" the service or "browsing" the service. Participants can also indicate that they are doing something else on the device. To avoid confusion when participants enroll in experience sampling, only one ESF is generated for the Twitter and Facebook samples, meaning recruits for one service can report on their use of the other as well. Other than allowing for cross-reporting, experience sampling and most other materials avoid mentioning there are two studies occurring at the same time.

The status update form (SUF), which participants complete 10 times in the closing questionnaire (or optionally 15 times, as explained above), also has 43 items, three asking for details of the status update (the text of the status update and date and time of publication), 37 inquiring about the emotional contents of the status update, and three items asking whether the status update includes a photo (and whether the participant is in the photo), a video[38] or a link (and whether the link refers to a news article). As shown in Appendices 3b and 3d, the ESF and SUF employ the same 37 emotion items, 36 of which were randomized a single time and presented in the same order in both forms for all participants[39]. A 37th item assessing overall valence appears at the top of the forms.

Importantly, participants are instructed in the closing questionnaire to submit only status updates where they are shown as the author and only status updates that include text. Twitter participants are also instructed to skip reply tweets (at the time, anything starting with an "@" symbol). These steps are taken to ensure status updates submitted by participants are in their own voice

[38] An analysis of video is not included in this dissertation.
[39] This consistency reduces the burden on participants but may also promote some habituation, which may make the comparisons in this dissertation's first and third analyses conservative with respect to hypotheses and the correlations in the second analysis conservative with respect to a skepticism regarding validity. Randomization of items was not possible with Paco, the experience sampling app I employ.

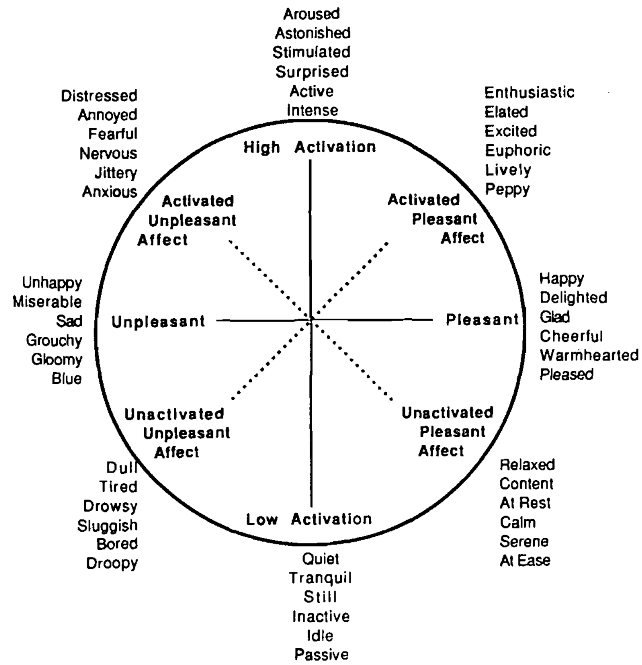

Figure 4. A circumplex model of affect (Larsen & Diener, 1992).

and, with respect to reply tweets, to exclude status updates not broadcast to the participant's larger audience. Including only status updates with text also provides a more favorable test for LIWC, the sentiment analysis program, making validity tests for LIWC more conservative with respect to a skepticism about the program.

Selecting and pretesting emotion items

Participants self-report emotion in the ESF and SUF using 37 emotion items. The first item is bipolar and asks for an overall assessment of valence, with 7 response options ranging from "Very negative" to "Very positive." The remaining 36 items are unipolar and refer to a specific emotion, with 5 response options ranging from "Not at all" to "Extremely." These items are drawn primarily from the Positive and Negative Affect Schedule (PANAS), the most widely-used affect assessment in psychology (Watson, Clark, & Tellegen, 1988), and from scholarly articles referencing the circumplex model of affect or *core affect* (Russell, 1980; Russell, 2003), which does not have an assessment in wide usage. In James Russell's model, first discussed in Chapter 1, emotion and mood terms are arrayed in a circumplex along theoretically orthogonal dimensions of valence and arousal (see Figure 4). On the circumplex, nearby items are positively correlated, while orthogonal items (at 90º distance) are uncorrelated and opposite items are negatively correlated. In PANAS, theoretically orthogonal positive and negative dimensions blend valence with elevated arousal, with no assessment of deactivated states. As such, the PANAS dimensions are now called Positive Activation and Negative Activation (Watson & Tellegen, 1999; see also Russell & Carroll, 1999). In addition to these models, I also draw items from previous studies of emotion in social media (e.g. Berger, 2011; Berger & Milkman, 2012; Krasnova et al., 2013; Burke & Develin, 2016) and from basic emotions theory (Ekman, 1999; Sabini & Silver, 2005).

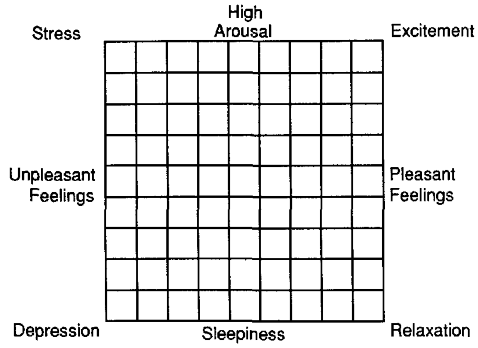

Figure 5. The Affect Grid (Russell, 1989). Participants mark a single box to indicate their present state and scores for pleasantness and arousal are taken along the horizontal and vertical dimensions, respectively.

An important practical consideration in selecting emotion items is that they apply reasonably well to both emotional experiences and status updates. Along these lines, I am skeptical of items that incorporate elements of physicality or talkativeness that may be difficult to apply to status updates or that apply by definition. For example, "quiet" and "still" are included in many studies following Russell's model as measures of deactivation (e.g. Yik, Russell, & Steiger, 2011), but almost by definition status updates are not "quiet," and by definition they may be "still," especially in photographs where subjects are literally frozen. Status updates may also not be viewed as "active" or "strong," two items included in PANAS. While I include "active" in my ESF and SUF in order to maintain content validity in my shortened PANAS scales (see below, "Validating shortened PANAS scales"), I ultimately do not include "quiet," "still" or "strong."

Preliminary studies

In February of 2016, I conducted five preliminary studies with U.S. workers from Amazon's Mechanical Turk service to evaluate candidate emotion items for the ESF and SUF[40]. The first four studies asked participants to refer to their emotional experience in the current moment. In the first three studies, I attempted to adapt the Affect Grid (Russell, Weiss, & Mendelsohn, 1989), a single-item assessment of valence and arousal in occasional use in the literature, for use in this dissertation (see Figure 5). The grid is designed for repeated, rapid assessment of core affect and showed good properties in the original validation study, including little to no correlation between the valence and arousal dimensions. However, the grid is difficult to implement in a mobile or online survey and requires lengthy instruction with participants prior to use. Thus, the goal of studies 1-3 was to find a pair or small set of Likert-type items that could assess valence and arousal with minimal correlation and minimal instruction. Unfortunately, these efforts were not successful. For example, several candidate bipolar arousal items (e.g. "extremely sleepy" versus "extremely awake," "extremely alert" and "extremely activated") correlated significantly and at above negligible levels with bipolar valence, generally around .30. Written comments from participants in these studies also revealed confusion with the terms "activated" and "deactivated," so they were excluded from further consideration.

Study 4 investigated the correlations of four bipolar valence items (positive–negative, happy–unhappy, satisfied–dissatisfied and pleasant–unpleasant) with 25 candidate unipolar items

[40] Sample sizes were 293, 228, 155 and 127 participants for studies 1-4, respectively. Study 5 recruited separate samples of Twitter and Facebook users, with 128 and 130 participants, respectively.

assessing deactivation (peaceful, sleepy, sluggish, still, passive, quiet, calm, relaxed, unsurprised, idle, inactive and drowsy) and activation (tense, stirred up, energized, revved up, alert, frenzied, jittery, active, intense, wakeful, surprised, attentive and aroused). I was no longer looking for a usable bipolar arousal item, and instead sought unipolar items that might be relatively "pure" measures of arousal (i.e. uncorrelated with bipolar valence) and that could be incorporated into a longer list of items assessing the different parts of Russell's circumplex model of affect[41] (1980). Of deactivation items, "sleepy," "still" and "unsurprised" had low and insignificant correlations with bipolar valence, and "quiet" and "passive" also showed desirable properties ("quiet" was marginally correlated in one case and "passive" in two cases with bipolar valence items). Other deactivation items had significant correlations with bipolar valence items in one or more cases. Of activation items, "stirred up" and "surprised" had low and insignificant correlations with the bipolar valence items, while "revved up" was marginally correlated in two cases. I include "sleepy," "passive," "stirred up" and "surprised" in the ESF and SUF because they showed reasonably good properties and are used in other studies to assess "pure" arousal[42] (e.g. Larsen & Diener, 1992; Barrett & Russell, 1998).

Study 5 gathered data on 48 emotion items to examine their intercorrelations and to validate shortened PANAS scales. Items included 34 of the 36 unipolar items in the final ESF and SUF ("amused" and "sick" were added after these preliminary studies) as well as items strong, alert, determined, attentive, distressed, guilty, scared, irritable, jittery, still, quiet, mixed, bittersweet and lustful. The 48 items include the full PANAS instrument (20 items), at least two items per point of the 12-point affect circumplex (Yik, Russell, & Steiger, 2011), and other emotions of interest — lonely, envious, lustful, in awe and loving — not covered by the other sets of items. Although incorporating a 12-point model of core affect (see Figure 6) rather than the more common 8-point model adds an additional 8 items to my ESF and SUF, the 12-point model is preferable because it allows me to group items predominantly about arousal but with elements of valence, or predominantly about valence but with elements of arousal, into short scales to test hypotheses related to overall arousal and valence. Because of the difficulty of locating items of "pure" arousal in particular, this approach should lead to more reliable results. In addition, the 12-point model was validated across four studies using multiple response formats, which Yik et al. (2011) discuss in detail, increasing confidence in its reliability.

For study 5, I recruited two samples, inviting users of Twitter and Facebook who had published a status update in the past four days to participate. Participants completed the 48-item emotion inventory with respect to the "current moment" and then with respect to their most recent status update, which they were asked to describe briefly. On the whole, correlations between the 48 items met expectations, although in some cases expected negative correlations, such as that between "passive" and "surprised," did not emerge until responses were ipsatized (as discussed above and in Chapter 4 under "Data cleaning and preparation," ipsatization is intended to mitigate issues of response style, including acquiescence). In other cases, items exhibiting the highest correlations for a specific item were not as expected; for example, "hostile" was more

[41] As Russell noted in an email, it is difficult to find emotion items that do not include some element of valence (personal communication, 2016).

[42] In study 4, I also found that "aroused" is likely to be confused with sexual arousal instead of the correct interpretation of feeling alert, wide awake and active (though these are not mutually exclusive). Over a third of participants reported referring partly or solely to their level of sexual arousal in response to that item. "Aroused" was removed from further consideration.

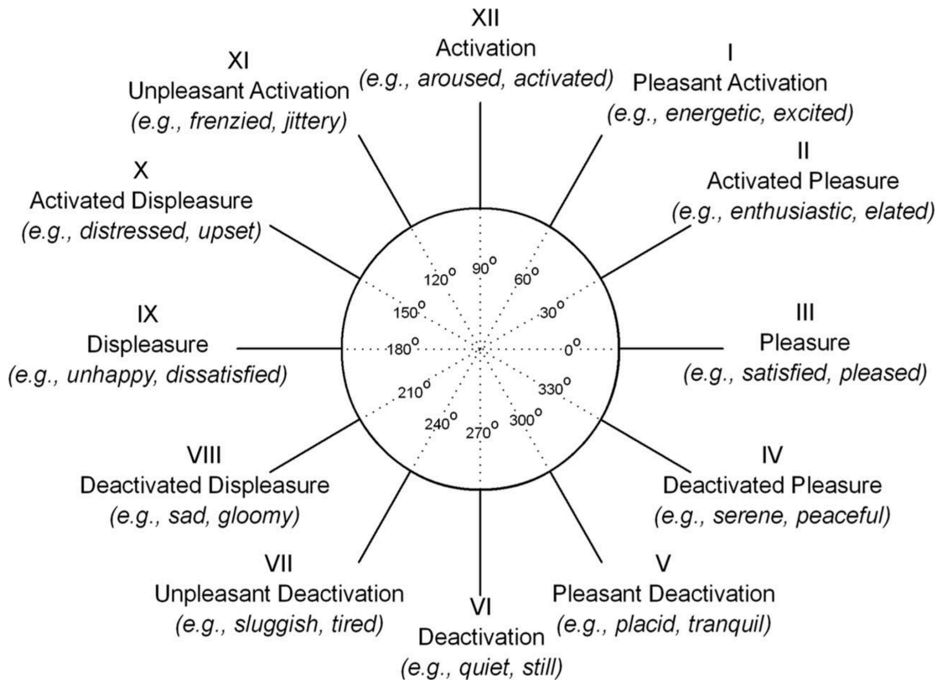

Figure 6. A 12-point affect circumplex (Yik et al., 2011).

associated with "disgusted" than "angry." Feeling "mixed" and "bittersweet," intended as measures of ambivalence, were predominantly associated with negative emotions, as was "lustful," which was not intended; these items were not included in the final ESF and SUF. Several items also received multiple complaints from participants that they were confusing or ambiguous. "Still," "strong," "bittersweet" and "lustful" received more than one complaint, while "quiet" and "active" received none. "Mixed" was cited in 12 complaints. Though "stirred up" and "happy" each received two complaints, they are still included in the ESF and SUF.

My concern that terms related to physical movement or talkativeness might be difficult to apply — or perhaps would apply by definition — to status updates received some support. For example, "quiet" showed large differences between the current moment and status updates for the Twitter and Facebook samples. On the other hand, "active" showed negligible differences. Encouragingly, participants did not find it more difficult to rate their emotions with respect to the current moment than with respect to their most recent status update. For the Twitter sample, a two-tailed t-test comparing the ease of rating the current moment ($M = 6.09$, $SD = 1.09$) to tweets ($M = 5.99$, $SD = 1.03$) was not significant, $t(122) = 1.20$, $p = .23$, $d = 0.09$. For the Facebook sample, the t-test comparing the current moment ($M = 6.18$, $SD = 1.05$) to posts ($M = 6.06$, $SD = 1.05$) was also not significant, $t(125) = 1.34$, $p = .18$, $d = 0.12$.

Final core affect measures

The final set of 36 unipolar items in the ESF and SUF includes two items per point of the 12-point affect circumplex, nearly all of which appear in the model's original validation study (Yik et al., 2011) and which appear widely in other studies employing the circumplex model, including other experience sampling studies (e.g. Russell, 1980; Larsen & Diener, 1992; Barrett & Russell, 1998; Barrett & Fossum, 2001; Barrett & Niedenthal, 2004; Conner & Barrett, 2005; Barrett, Bliss-Moreau, Dunan, Rauch, & Wright, 2007). "Surprised," "sleepy," and "passive" do

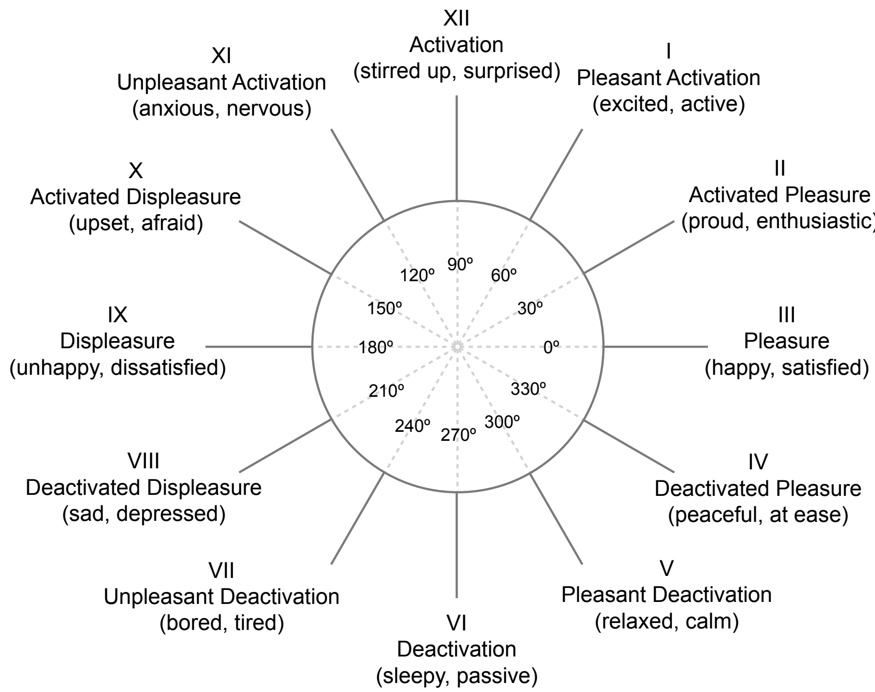

Figure 7. The final 12-point assessment of core affect for the experience sampling and status update forms.

not appear in the original validation study for the 12-point affect circumplex (Yik et al., 2011), but are included in the same locations in other studies that use the circumplex model. Figure 7 shows the final core affect assessment. In analyses, items are grouped into short scales to assess overall activation (circumplex segments 60º-120º), deactivation (240º-300º), positivity (330º-30º) and negativity (150º-210º). Grouping items into scales this way is intended to generate more reliable measures of arousal and valence because the groupings combine “pure” arousal or valence segments with their two closest neighboring segments, which are predominantly about arousal with elements of valence, or predominantly about valence with elements of arousal, respectively. For example, the circumplex activated scale combines the “pure” activation segment (90º) with the pleasant activation (60º) and unpleasant activation (120º) segments. Thus, I use these circumplex scales to test hypotheses regarding valence and arousal (e.g. H1, H3).

Validating shortened PANAS scales

Data from study 5 was also used to validate a shortened PANAS, which is 20 items in complete form (Watson et al., 1988). There are two shortened versions in the literature. The 10-item assessment in Kercher (1992) has received criticism because it was developed by selecting the highest loading items reported by Watson et al. (1988), which inflates the reliability of the scale at the expense of content validity (MacKinnon et al., 1999). Thompson (2007) avoids this in developing a 10-item version of PANAS for non-native English speakers by choosing items across word clusters in the item pool from which PANAS was originally developed. Crawford and Henry (2004) show that the 10 items of the negative activation (NA) scale contain five significantly covarying item pairs: distressed and upset, guilty and ashamed, scared and afraid, nervous and jittery, and hostile and irritable. In a similar way, the 10 items of the positive activation (PA) scale contain four significantly covarying item groupings: interested, alert and attentive; excited, enthusiastic and inspired; proud and determined; and strong and active. As

Thompson (2007) notes, these covariances suggest scope for eliminating items without seriously limiting the content domain of the scales.

Confirmatory factor analyses of the full PANAS using the four sets of data from study 5 — current moment and status update ratings from the Twitter and Facebook samples — revealed poor fit for the two factor model developed by Watson et al. (1988), with the root mean square error of approximation (RMSEA) over 0.1 and the comparative fit index (CFI) under 0.9 in all cases (all chi-squared statistics were significant). Exploratory factor analyses suggested a three-factor, rather than two-factor, solution for all four datasets as well[43].

Following Thompson (2007), I selected items in my shortened PA and NA scales by examining factor loadings in exploratory factor analyses (specifying a two-factor solution) across the four sets of ratings, by examining Cronbach's alpha and item-rest correlations, and by ensuring an item from each content pair or grouping is included in the final scales. The shortened NA scale emerged easily, with upset, ashamed, afraid, nervous and hostile showing higher average factor loadings and item-rest correlations than their respective pairs. This replicates the shortened scale developed by Thompson (2007). Among all items in the PA scale, "attentive" and "alert" had the lowest average factor loadings and the lowest item-rest correlations, leaving "interested" for that item grouping. From the second three-item grouping, I selected "enthusiastic" and "inspired" because they had higher average factor loadings and item-rest correlations than "excited." "Proud" was selected over "determined" for similar reasons, and though "active" had a slightly lower average factor loading than "strong," "active" was selected because it received no complaints from participants. From Thompson's shortened PA (2007), only "inspired" and "active" are retained.

Though no additional cross-validating data was collected, the two shortened scales (upset, ashamed, afraid, nervous and hostile for NA and interested, enthusiastic, inspired, active and proud for PA) show acceptable properties across the four sets of ratings in study 5. Exploratory factor analyses suggest a two-factor solution for the 10-item shortened PANAS. Cronbach's alphas average .86 for PA and .91 for NA, and the shortened PA and NA scales correlate at an average of .96 and .98 with their respective full scales. I employ the PANAS negative activation scale primarily in the second analysis regarding validity of inferences.

Finally, items "amused," "in awe," "angry," "lonely," "envious," and "sick" are included in the ESF and SUF to round out the set of items relevant in prior literature[44] (Berger, 2011; Berger & Milkman, 2012; Jordan et al., 2011; Krasnova et al., 2013; Burke & Develin, 2016). "Disgusted" and "loving" are additionally included to round out the set of basic emotions (Ekman, 1999; Sabini & Silver, 2005). "Jealous" is excluded to avoid confusion with "envious." The distinction is that we envy someone when they possess something we desire, which means envy involves two parties. Jealousy emerges when we are afraid to lose someone to someone *else*, and thus it

[43] A cursory search of the literature for "three factor PANAS" suggests this is not uncommon, although it was not apparent in the original study (Watson et al., 1988). My guess is that a high level of acquiescence bias in these samples is part of the reason a third factor emerged. There was substantial attenuation of correlations between items when they were ipsatized in study 5, which also suggests acquiescence bias.

[44] "Sick" is one of the top 10 emotion annotations on Facebook, according to Burke & Develin (2016), and was requested as an item by a participant in study 5, who was ill and frustrated there was no way to express this. Because of the popularity of "sick" on Facebook and to accommodate ill participants, I include it.

involves three parties. Although people only rarely use the word "envy" when they mean "jealousy," they do often make the reverse misclassification (Smith & Kim, 2007).

Recruitment and study administration

I recruited participants for a Twitter sample and a Facebook sample using advertisements on Twitter and Facebook, listings on Craigslist (https://www.craigslist.org) and the Berkeley Xlab subject pool (http://xlab.berkeley.edu), as well as tasks on Amazon's Mechanical Turk service (https://requester.mturk.com). The Berkeley Xlab subject pool contains undergraduate and graduate students as well as University staff, and settings for tasks on Mechanical Turk excluded workers outside the U.S. and workers with under a 95% task approval rate or under 50 previously-approved tasks[45]. Most Twitter participants were recruited through ads on Twitter (81% of the final sample), and the remaining were recruited through tasks on Mechanical Turk (8%) and listings on Craigslist and Berkeley Xlab (12%). Facebook participants were recruited primarily through tasks on Mechanical Turk (69% of the final sample) and the remaining were recruited through listings on Craigslist and Berkeley Xlab (31%). Unfortunately, Facebook ads were not cost effective and were discontinued after a few days. Sample sizes and demographics are presented in the next chapter.

Recruitment messages encouraged people who were interested in participating in the study to visit websites located at http://twitterstudy.berkeley.edu and http://facebookstudy.berkeley.edu. These websites give an overview of the study, eligibility requirements and compensation, and were also intended as a reference for participants once they joined the study, providing access to a copy of the consent form, experience sampling onboarding and offboarding materials, and my study-specific contact information in case they needed assistance.

When they clicked to join, participants were brought to the consent form, where they were asked for a primary contact email address and a Google-affiliated email address, if different. After providing their consent, participants began the opening questionnaire. The consent form and opening questionnaire were implemented in a Qualtrics survey (https://www.qualtrics.com), and participants received an automated email after completing the opening questionnaire welcoming them to the study, inviting them to reply with questions and providing a link to the study website.

After completing the opening questionnaire, participants were redirected back to the study website, where they received step-by-step instructions for downloading the Paco app to their phones to begin the experience sampling week. Paco (https://www.pacoapp.com) is an open source experience sampling app maintained by engineers at Google, and is available for iOS and Android phones and free to use. The app allows participants to set a custom signal schedule and then signals them within the schedule to complete the ESF according to the experimenter's specifications (for the present study, these were 4 times per day at random times no less than one hour apart). Most participants kept the default schedule of 8:30 a.m. to 11:30 p.m.[46] Signals take the form of a push notification from the app, which is repeated 5 minutes later if there is no response and disappears after another 25 minutes if there is still no response. Participants are also instructed to submit a "self-report" as soon as possible if they miss a signal. Paco is able to signal

[45] For more on Mechanical Turk as a subject pool, see Berinsky, Huber, & Lenz (2012).

[46] Unfortunately, the schedule end time could not be extended past midnight due to a software limitation of Paco, though the schedule start time could be extended into the very early hours. Less than 8% of tweets and less than 5% of Facebook posts in the final dataset occurred between 12 and 4 a.m. local time.

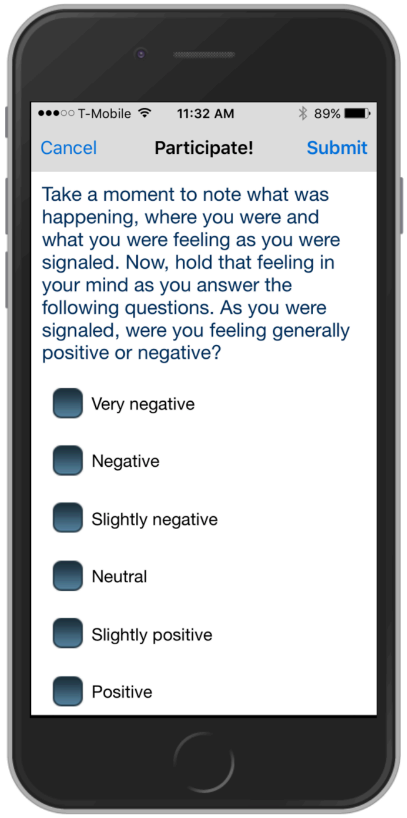

Figure 8. The experience sampling form in Paco.

participants and receive submissions without a persistent data connection, but requires an occasional connection to the Internet to upload responses[47]. Figure 8 shows the ESF in Paco.

Although I administered the study remotely, I followed the guideline in Hektner et al. (2007, Chapter 3) to check in with participants individually, and sent an email to each participant a day or two after he or she began the experience sampling to ask how it was going and to assist him or her with any issues. Many iOS participants encountered a known bug where responses are not accepted if the keyboard is showing (they needed to press the "Done" key on the keyboard to make it disappear). A small number of participants were not able to receive signals even after adjusting their notifications preferences and ringer volume, and I acted on their behalf as a liaison to the Paco engineering team to help resolve these issues.

One week following enrollment in the study, participants received an automated email with a link to the closing questionnaire, which collected their contact information a final time for matching with their other responses. This questionnaire was also implemented with Qualtrics. At the end of the closing questionnaire and in a confirmation email, participants received a payment ID for collecting their payments following processing of their closing questionnaires. Status updates submitted with all closing questionnaires were manually examined and were flagged for

[47] After receiving emails and a phone call from participants who were worried about the long list of permissions requested by the Android app, I rewrote onboarding materials to clarify that the app would not use any of the permissions, except for their name and email address, if they enrolled solely in the present study (other studies could take advantage of the participant's location, camera and so forth).

later processing if they appeared to be invalid (e.g. if all status update texts were entered as "none" or all times were the same). Only status update texts, dates and times were examined. After completing the closing questionnaire, participants were redirected back to the study website where they received offboarding instructions for Paco.

The study operated similarly for participants recruited through Mechanical Turk. The task on Mechanical Turk was to complete the opening questionnaire, which paid $1.75. Those who agreed to the consent form and completed the opening questionnaire were invited to optionally enter their contact information and continue with the rest of the study. Their decision about whether to continue with the study did not affect their payment for the task.

The study was operational and collecting data from June 29 to August 25, 2016, when it appeared I would be likely to reach my sample size target of 300 completions per sample, based on participant experience sampling signal response rates and examination of closing questionnaires[48]. While the study was operational, Pokémon Go was released (July 6), Donald Trump and Hillary Clinton were officially nominated for president at the Republican and Democratic national conventions (July 18-21 and July 25-28, respectively) and the Summer Olympics took place (August 5-21). Eligibility statements required that each participant be a Twitter or Facebook user who tweets or posts "around once or twice each day from a personal account"; reside in the U.S., speak English and be 18 years or older; carry an iPhone or Android phone with a data plan or regular connection to WiFi; have a Google-affiliated email address; and be safe to interrupt during the day. Participants were compensated $25-28[49] and entered in a random drawing for a $500 Apple Gift Card. I announced the winner on the study websites and on Twitter in late August and the gift card was mailed soon after to the winner in Mississippi.

Questionnaires and select study materials are presented in Appendices 3 and 4 (some questionnaire items are not analyzed in this dissertation). The next chapter presents the results.

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[48] This target was chosen largely to ensure moderation analyses were adequately powered.
[49] Variation in compensation was due to variable recruiting costs. Where there was no charge for recruitment (e.g. with the Berkeley Xlab subject pool), savings were passed on to participants.

Chapter 4. Results

In this chapter, I present the results of the three analyses, which center on the emotional profile of status updates, the validity of inferring emotional life with status updates, and the emotional experience of browsing social media. First, I discuss data cleaning and preparation, and characteristics of the final Facebook and Twitter samples.

Data cleaning and preparation

Since data was collected across three phases — the opening questionnaire, experience sampling week and closing questionnaire — three sets of data were generated for analysis. Prior to analysis, the datasets were cleaned and merged on the participant. Except where manual edits and corrections were required, most of the cleaning and preparation process was conducted using scripting in Python and Stata. This was a lengthy and deliberate process, but I will briefly summarize it here.

In the first stage, I checked Google-affiliated email addresses submitted by participants in the closing questionnaire to ensure they matched with an email address submitted in the opening questionnaire and matched with an email address used to log into Paco for experience sampling, and I made corrections to email addresses where required (for example, to correct typos or match participants in rare cases where they changed logins partway through experience sampling). I also reviewed and marked duplicate opening and closing questionnaires from participants who may, for example, have stopped and restarted their questionnaires. At this stage, I also assigned variable names and created scales for requisite items in the opening and closing questionnaires.

As mentioned in Chapter 3, I manually reviewed the status updates submitted by each participant in the closing questionnaire while data collection was underway to ensure adequate data quality and to catch obvious errors. Where status update texts, dates and times contained minor errors that were easily corrected, I flagged these for later correction. For example, if a participant pasted more than the text of a status update (and included other aspects of the post, like his or her name as the author), the participant's closing questionnaire was flagged so these extraneous elements could be removed. Where status update texts, dates and times contained many errors or otherwise appeared suspicious, I flagged these and emailed participants prior to issuing payment to ask them to confirm the questionable elements. For example, the vast majority of participants followed instructions and submitted their most recent status updates in reverse chronological order, starting with their most recent and working backward in time. In some cases, however, the dates and times participants submitted were not in a particular order or had some other irregularity, such as times that all occurred at the top of the hour. When contacted, some participants admitted fabricating their status updates or "confirmed" dates and times with very different dates and times. When participants could not provide a satisfactory explanation or set of corrections, their closing questionnaires were marked as invalid and removed in a later step.

Once data collection was complete, I returned to closing questionnaires flagged as invalid or in need of corrections and reviewed these again and made the requisite corrections. In cases where participants did not respond to email requesting confirmation of some of their status updates and there was no compelling reason to remove them, participants were given the benefit of the doubt and their closing questionnaires were marked as valid. When the date or time of a status update was unclear (e.g. missing "AM" or "PM") and could not be readily extrapolated from surrounding status updates, the status update was removed. During this manual review, only status update texts, dates and times were reviewed; no other part of the status update form (SUF) was consulted.

Following this, I separated SUFs from closing questionnaires and, after removing duplicate opening and closing questionnaires, merged the opening and closing questionnaires on the participant. Next, I converted SUFs to long format (one SUF per line) and checked them for a response pattern likely to be invalid, where all 36 unipolar emotion items receive the same rating. Notably, a majority of SUFs with this response pattern were submitted by participants in closing questionnaires already marked as suspicious or invalid. Because it is possible to imagine rare cases where choosing the same response for each emotion is a valid response[50], I marked SUFs with this pattern as invalid only if the pattern occurred in 20% or more of a participant's SUFs. In both the Facebook and Twitter samples, about 2% of SUFs not marked as invalid in a previous data cleaning step showed this response pattern.

Automated data cleaning was also conducted for experience sampling forms (ESFs). Less than 2% of ESFs across the two samples exhibited the response pattern where all 36 unipolar emotion items receive the same rating. Again, I marked these ESFs as invalid only where the pattern occurred in 20% or more of a participant's ESFs. "Self-reports" — ESFs submitted by a participant to make up for a missed signal, or submitted by opening Paco rather than swiping on the notification — were marked for removal if they did not directly follow a signal lacking a response or if they were submitted more than two hours after the prior signal. I also checked for duplicate ESFs that are occasionally uploaded by Paco when its connection to the Internet is spotty, and marked these for removal. In addition, because Paco did not have functionality to prevent illogical responses to the ESF item regarding the feeling conveyed to others when interacting with them in person (see Appendix 3b), rare illogical responses to this item were reset to missing. It is difficult, for example, to convey a feeling to others when one is not with others.

In the next stage, I removed remaining data marked as invalid across all datasets and then generated a set of ipsatized responses for the 36 unipolar emotion items[51]. As introduced in Chapter 3, ipsatization in this context is intended to mitigate spurious inflation of correlations between SUF and ESF emotion ratings resulting from response style, i.e. where the participant tends to center responses and how much of the response scale he or she uses. Ipsatization is appropriate for items that share the same response scale and include heterogenous or, optimally, opposite content, such as items "happy" and "unhappy" (Yik et al., 2011). Ipsatization requires calculating a response mean and standard deviation for each participant across all items and responses — in this dissertation's case, the participant's ratings for all 36 unipolar emotion items across all of his or her remaining SUFs and ESFs. The participant's response mean is then

[50] Choosing "Not at all" for every response, for example, may indicate the participant felt nothing and expressed no emotion in his or her status update. However, because the 36 emotion items cover such a wide range of states, it is unlikely a status update reflects none of them (or all of them).

[51] For the purposes of ipsatization, I temporarily retained ESF "self-reports" that were marked as invalid when they did not directly follow a signal lacking a response or when they were submitted more than two hours after the prior signal. This was done to obtain the best possible estimates of each participant's response mean and standard deviation. Following ipsatization, these ESF "self-reports" were removed.

subtracted from each of his or her responses and the difference is divided by the participant's response standard deviation. Below, I specifically note when ipsatized data is used in analyses; otherwise, analyses refer to non-ipsatized data.

Next, I created requisite situational variables such as emotional experience while browsing Facebook and Twitter, and assembled circumplex and PANAS scales in SUFs and ESFs, as outlined in Chapter 3. For example, the circumplex "negative" scale in SUFs and ESFs is items 150º-210º on the circumplex (see Figure 7).

In the final stage of data preparation, I merged ESFs with the combined opening and closing questionnaires[52] and then circumscribed SUFs and ESFs such that the two datasets share common start and end dates for each participant. As introduced in Chapter 3, this follows a common approach in the literature (e.g. Kramer et al., 2014) to use the status updates people publish over a given period to infer their emotional experience during the same period. By circumscribing data this way, I ensure SUFs predating the start of experience sampling are not included in analyses relating SUFs and ESFs. For participants who publish status updates more frequently than 1-2 times per day, this also ensures ESFs predating the tenth (or fifteenth) most recent SUF are not included in analyses relating SUFs and ESFs.

To create this circumscribed "date range" dataset, I first removed SUFs occurring on dates before the first ESF or after the last ESF. Then, I removed ESFs occurring on dates before the first remaining SUF or after the last remaining SUF. Finally, I averaged items over all remaining SUFs and ESFs for each participant and merged the averaged SUFs with the averaged ESFs and questionnaires on the participant. By averaging over SUFs and ESFs, participants are weighted in results equally, which arguably improves the representativeness of findings over designs in the literature that weight individual status updates equally (e.g. Dodds et al., 2011).

Sample characteristics and reliability checks

From a total of 473 participants who enrolled in the Facebook study by completing the opening questionnaire and at least one ESF with Paco, 344 remain in the final Facebook sample, or about 73%. For the Twitter sample, 534 participants enrolled and 352 remain in the final sample, or about 66%. All participants in the final samples have at least one day of SUF-ESF overlap. The SUF-ESF date range for the median Facebook participant spans 5 days and includes 5 SUFs and 16 ESFs. For the median Twitter participant, the date range spans 4 days and includes 9 SUFs and 12 ESFs.

Among participants in the final Facebook sample, 61% identify as female and less than 1% identify as something other than male or female. About 62% are white or Caucasian, 16% are Asian, 8% are black or African-American, 4% are Hispanic or Latino, less than 1% are Native American or Alaska Native, less than 1% are Pacific Islander or Native Hawaiian and 7% are of mixed race or ethnicity. The median age is 31 years old ($M = 33$), median income is between \$25,000 and \$50,000 and 55% have a college degree. Participants have a median of 321

[52] This procedure copies the participant's combined opening and closing questionnaire to each of his or her ESFs. These copies are collapsed again to a single opening and closing questionnaire in the final step when an average is taken across SUF and ESF items.

Facebook friends ($M = 524$) and a majority joined Facebook prior to 2010. In addition, 10% publish status updates publicly, 74% use their full first and last names in their Facebook profiles and 80% say they are featured in their profile photos. According to Pew Research Center statistics, Facebook users as a whole, like this sample, appear to skew female, younger, college educated and lower income (Greenwood, Perrin, & Duggan, 2016).

In the final Twitter sample, 69% identify as female and about 3% identify as something other than male or female. About 61% are white or Caucasian, 11% are black or African-American, 10% are Hispanic or Latino, 9% are Asian, none are Native American or Alaska Native, none are Pacific Islander or Native Hawaiian and 9% are of mixed race or ethnicity. The median age is 29 years old ($M = 33$), median income is between \$25,000 and \$50,000, and 53% have a college degree. Participants follow a median of 297 people on Twitter ($M = 646$), have a median of 282 followers ($M = 721$) and a majority joined Twitter prior to 2012. About 84% of participants tweet publicly, 36% use their full names and 69% are featured in their profile photos. According to Pew Research Center statistics, Twitter users as a whole also appear to skew younger and college educated, like this sample, but there is little gender gap and Twitter users appear to be somewhat higher income on average (Greenwood et al., 2016).

Appendix 5 shows descriptive statistics for these and other variables.

Experience sampling reliability and reactivity

Prior to circumscription of SUFs and ESFs in the final stage of data preparation, the median Facebook participant had 23 valid ESFs (22 signaled responses and 1 "self-report") out of 29 total signals and the median Twitter participant had 22 valid ESFs (21 signaled responses and 1 "self-report") out of 29 total signals. Average response rates for the Facebook and Twitter samples were 78% and 75%, respectively. These rates compare favorably with other experience sampling studies (see e.g. Hektner et al., 2007, pp. 42, 107-108).

Split-half reliability for ESFs in both samples is also on par with previous studies (Hektner et al., 2007, pp. 115-118). ESF ratings for the first and second halves of the experience sampling 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 Twitter[53].

As a test of reactivity, participants in both samples showed no change in life satisfaction between the opening and closing questionnaires, but both samples did show a slight decrease in depression. In the Facebook sample, using two-tailed t-tests, life satisfaction did not change from the opening ($M = 4.52$, $SD = 1.44$) to the closing ($M = 4.50$, $SD = 1.48$) questionnaire ($t(343) = 0.51$, $p = .61$, $d = 0.01$), but depression did decrease slightly from the opening ($M = 1.67$, $SD = 0.66$) to the closing ($M = 1.62$, $SD = 0.62$) questionnaire ($t(343) = 2.66$, $p < .01$, $d = 0.08$). In the Twitter sample, life satisfaction similarly did not change from the opening ($M = 4.23$, $SD = 1.33$) to the closing ($M = 4.19$, $SD = 1.42$) questionnaire ($t(351) = 1.08$, $p = .28$, $d = 0.03$), but depression did decrease from the opening ($M = 1.85$, $SD = 0.71$) to the closing ($M = 1.80$, $SD =$

[53] All correlations are highly significant ($p < .0001$). For 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 highly significant ($p < .0001$).

0.73) questionnaire ($t(351) = 2.23$, $p < .05$, $d = 0.07$). It appears experience sampling may have had a very mild therapeutic effect for participants in this study.

Correlates of status update and experience sampling forms per day
As shown in Appendix 6, several dispositional and demographic factors have low but significant correlations with the number of SUFs and ESFs per day participants have on average in the final samples. In the Facebook sample, SUFs per day is negatively correlated with posting concerns, expressive suppression and life satisfaction, and positively correlated with age. In a regression, it also appears Asian participants have slightly fewer SUFs per day. In the Twitter sample, SUFs per day is negatively correlated with posting concerns, life satisfaction and using one's full name, and positively correlated with concern for information privacy, depression, neuroticism, venting, negative activation (PANAS, dispositional), number of followers and people followed, and tenure (years since joining). In a regression, it also appears black or African-American participants have more SUFs per day.

In the Facebook sample, ESFs per day is negatively correlated with extraversion, negative activation (PANAS, dispositional) and number of friends. In the Twitter sample, ESFs per day is negatively correlated with depression, negative activation (PANAS, dispositional) and number of followers and people followed, and positively correlated with conscientiousness, life satisfaction and using one's full name.

Though the correlations are generally low, they suggest the utility of including SUFs and ESFs per day as control interactions in the moderation analyses below. For example, because posting concerns is associated with fewer SUFs per day, status updates hypothetically could be less predictive of emotional experience for individuals with higher posting concerns simply because they publish fewer status updates. Of course, a valid way to disclose less about one's emotions is to simply publish fewer status updates. However, in analyses it will be interesting to distinguish whether this accounts for the observed moderating effects.

Similarly, and more important methodologically, the number of ESFs participants complete each day might also influence or confound moderation analyses. For example, because people higher in conscientiousness complete more ESFs per day in the Twitter sample, tweets hypothetically could be more predictive of emotional experience for these participants simply because a better measurement of their emotional experience was taken. This could dilute the hypothesized *negative* moderating effect for conscientiousness (i.e. the hypothesis that status updates are less predictive of emotional experience for people higher in conscientiousness). Thus, it will be important to include ESFs per day as a control interaction in regressions.

Next, I present the results for this dissertation's three analyses.

The emotional profile of the status update

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," see Diener et al., 2015), Facebook and Twitter participants rate themselves in ESFs as about "Slightly positive" on average, at a respective 5.01 and 4.86 on the bipolar positive-negative item. Response options on

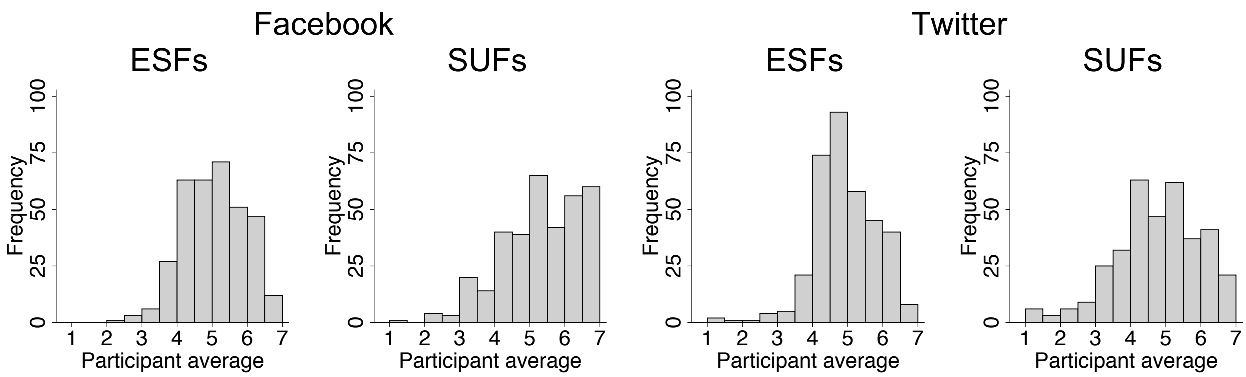

Figure 9. Histograms showing frequencies of participant averages for the bipolar positive-negative item in emotional experience (ESFs) and status updates (SUFs).

this item range 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 in the Facebook and Twitter samples also rate their status updates as about "Slightly positive" on average, at a respective 5.24 and 4.69 (see Appendix 7). Figure 9 shows histograms for ESFs and SUFs on the bipolar positive-negative item in both samples.

A first point in comparing the emotional profile of status updates (SUFs) to emotional experience in daily life (ESFs) is that SUFs and ESFs appear to be very similar with respect to sample means for the 36 unipolar emotion items. Figure 10 plots these sample means in the Facebook

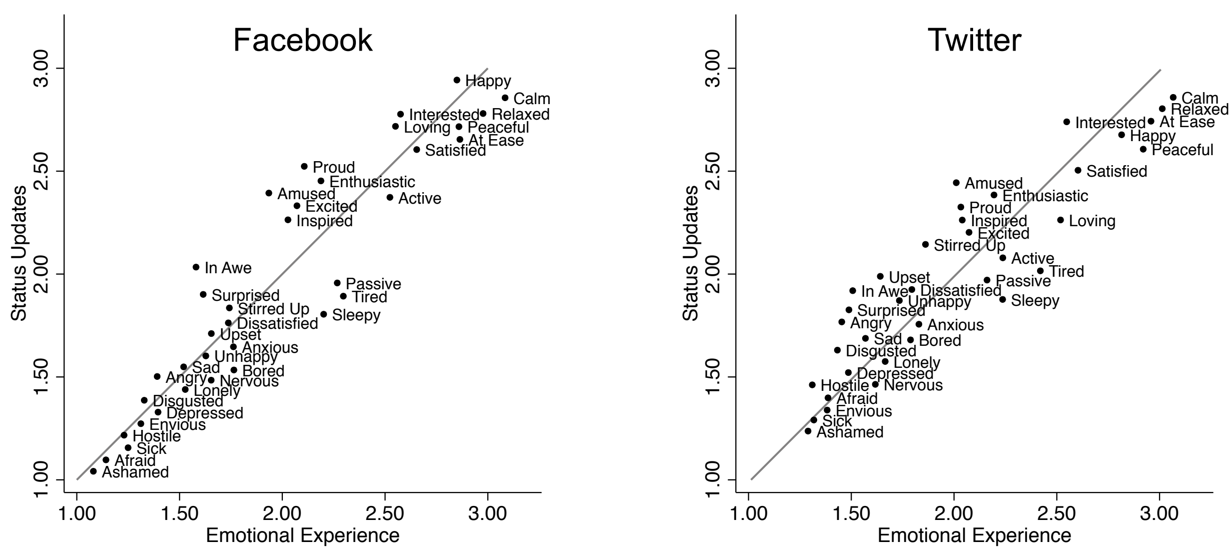

Figure 10. Sample means for the 36 unipolar emotion items are plotted for status updates (SUFs) and emotional experience (ESFs). Emotions falling above the 45º lines are overrepresented in status updates relative to emotional experience, while emotions falling below are underrepresented. The response scale for the 36 unipolar emotion items ranges from 1 ("Not at all") to 5 ("Extremely"). Placement of items has been adjusted to minimize overlap, with an effort to preserve relative positioning (for exact sample means, see Appendix 7). Due to clustering, some emotions in the lower-left corner of the Facebook plot have been shifted substantially toward the origin.

Table 1. Top five emotions for the Facebook sample, by sample mean, in emotional experience and status updates.

Top emotions: Facebook participants					
In emotional experience (ESFs)			In status updates (SUFs)		
	Mean	*SD*		Mean	*SD*
Calm	3.08	0.87	Happy	2.94	1.11
Relaxed	2.95	0.86	Calm	2.86	1.01
At Ease	2.94	0.89	Interested	2.77	1.05
Peaceful	2.90	0.93	Relaxed	2.75	1.03
Happy	2.85	0.93	Peaceful	2.72	1.09

Table 2. Top five emotions for the Twitter sample, by sample mean, in emotional experience and status updates.

Top emotions: Twitter participants					
In emotional experience (ESFs)			In status updates (SUFs)		
	Mean	*SD*		Mean	*SD*
Calm	3.07	0.77	Calm	2.80	0.90
Relaxed	3.01	0.76	Relaxed	2.79	0.93
At Ease	2.94	0.81	At Ease	2.74	0.96
Peaceful	2.92	0.84	Happy	2.73	0.96
Happy	2.81	0.87	Interested	2.73	0.97

and Twitter samples, with some adjustment to reduce overlap. Items that fall above the 45º lines are *overrepresented* in status updates relative to emotional experience, while items that fall below are *underrepresented* relative to emotional experience. In general, the 36 items fall close to the 45º line, indicating a high degree of correspondence between SUF and ESF sample means. Indeed, the correlation between SUF and ESF sample means for these items is .93 for both Facebook and Twitter, and the average absolute value of the difference between SUF and ESF sample means is only .16 for Facebook and .17 for Twitter. Response options for the items range from 1 ("Not at all") to 5 ("Extremely").

Emotional experience in daily life appears to be characterized predominantly by calm, relaxation and other positive, deactivated emotions, as well as happiness. Tables 1 and 2 list the top five emotions in ESFs and SUFs for the Facebook and Twitter samples. Counterintuitively, status updates appear to *reflect* the calm of day-to-day emotional experience, with positive, deactivated emotions and happiness also predominant in SUFs, along with interest, which is higher in arousal. "Calm" is the top emotion overall in emotional experience across the two samples and is the top emotion in tweets, while "happy" is the top emotion in Facebook posts. Sample means are near the midpoint of the response scale for these items, or a moderate average rating. Across

Table 3. Top five over- or underrepresented emotions in status updates for the Facebook sample, by absolute difference between sample means for status updates (SUFs) and emotional experience (ESFs). Items in parentheses are underrepresented. T-tests are two-tailed. These are also the top five differences by Cohen's *d*.

Top differences: Facebook

	SUFs		ESFs						
	M	*SD*	*M*	*SD*	Difference	*df*	*t*	*p*	*d*
Amused	2.39	1.00	1.92	0.76	0.46	343	8.78	0.0000	0.52
(Tired)	1.76	0.84	2.20	0.82	-0.44	343	-10.76	0.0000	0.53
In Awe	1.90	0.87	1.48	0.66	0.42	343	10.50	0.0000	0.54
Proud	2.51	1.08	2.10	0.91	0.42	343	8.10	0.0000	0.42
(Sleepy)	1.68	0.80	2.09	0.77	-0.40	343	-10.09	0.0000	0.52

Table 4. Top five over- or underrepresented emotions in status updates for the Twitter sample, by absolute difference between sample means for status updates (SUFs) and emotional experience (ESFs). "Tired" is underrepresented. T-tests are two-tailed. "Angry" ($d = 0.36$) replaces "tired" in top five differences by Cohen's *d*.

Top differences: Twitter

	SUFs		ESFs						
	M	*SD*	*M*	*SD*	Difference	*df*	*t*	*p*	*d*
Amused	2.36	0.95	1.99	0.75	0.37	351	7.99	0.0000	0.43
Stirred Up	2.22	0.98	1.89	0.78	0.33	351	7.60	0.0000	0.37
(Tired)	2.08	1.01	2.40	0.97	-0.32	351	-6.65	0.0000	0.32
In Awe	1.86	0.86	1.55	0.64	0.31	351	8.22	0.0000	0.41
Surprised	1.80	0.77	1.51	0.61	0.29	351	7.31	0.0000	0.41

ESFs and SUFs in the Facebook and Twitter samples, "ashamed" receives the lowest average ratings, close to "Not at all."

Another way to characterize the emotional profile of the status update is to examine the emotions with the largest average differences between status updates and emotional experience, in absolute value. As shown in Tables 3 and 4, Facebook posts appear to be more amused, in awe and proud, and less tired and sleepy, than emotional experience in daily life. Tweets are similarly more amused and in awe, and less tired, but also more stirred up and surprised relative to emotional experience (see also Figure 10). The top five differences for the Facebook sample are the same when ranked by Cohen's *d* instead of sample mean differences. For Twitter, "angry" replaces "tired" in the top five when ranking differences by Cohen's *d*. Two-tailed t-tests for all differences are highly statistically significant.

While these are the largest differences among the 36 items, they are modest differences relative to the response scale, at less than half a point in absolute value. Alternatively, as a percentage of the average rating for emotional experience, Facebook posts are 28%, 24% and 20% more in awe, amused and proud, respectively, than emotional experience on average, and 20% and 19% less tired and sleepy. Similarly, tweets are 20% and 19% more in awe and surprised, 18% more amused and angry, and 17% more stirred up. These are the top five differences in the Facebook and Twitter samples, in percentage terms. "Tired" is further down the list for tweets, at 13% less.

Appendix 7 shows sample means and t-tests of differences for emotion items and scales.

Valence

Hypothesis 1 predicted that status updates would be more positive and less negative than day-to-day emotional experience. This hypothesis is mostly supported for Facebook posts but not for tweets. On the bipolar positive-negative item, Facebook posts ($M = 5.24$, $SD = 1.18$) are significantly more positive than emotional experience ($M = 5.01$, $SD = 0.87$), $t(343) = 3.89$, $p < .0001$, $d = 0.23$. Similarly, on the circumplex positive scale, Facebook posts ($M = 2.67$, $SD = 0.92$) are more positive than emotional experience ($M = 2.61$, $SD = 0.78$), $t(343) = 1.66$, $p < .05$, $d = 0.07$. However, on the circumplex negative scale, Facebook posts ($M = 1.45$, $SD = 0.58$) are not less negative than emotional experience ($M = 1.46$, $SD = 0.58$), $t(343) = -0.37$, $p = .35$, $d = 0.02$[54]. Overall, the results suggest a positivity bias for Facebook posts.

Tweets, in contrast, are more *negative* on the bipolar positive-negative item ($M = 4.69$, $SD = 1.21$) than emotional experience ($M = 4.86$, $SD = 0.89$), $t(351) = -2.81$, $p < .01$, $d = 0.16$, although they are still slightly positive overall. Tweets are also more negative on the circumplex negative scale ($M = 1.71$, $SD = 0.73$) than emotional experience ($M = 1.60$, $SD = 0.65$), $t(351) = 3.51$, $p < .001$, $d = 0.16$. However, on the circumplex positive scale, tweets ($M = 2.55$, $SD = 0.80$) are not less positive than emotional experience ($M = 2.58$, $SD = 0.69$), $t(351) = -0.80$, $p = .21$, $d = 0.04$[55]. Overall, the results suggest a negativity bias for tweets[56].

Emotion in context

RQ1 asks how the valence of status updates compares to the experience of in-person social settings or the feeling we convey to others in those settings. As shown in Appendix 3b, the ESF

[54] T-tests reported for Hypothesis 1 are one-tailed as the hypothesis is directional. Because circumplex scales combine unipolar emotion items, they employ a five-point response scale. Results for the circumplex positive scale (peaceful, at ease, happy, satisfied, proud and enthusiastic) appear to be driven largely by the overrepresentation of pride, enthusiasm and happiness in Facebook posts (see Appendix 7). Within the circumplex negative scale (upset, afraid, unhappy, dissatisfied, sad and depressed), there are no differences between Facebook posts and emotional experience except that Facebook posts are less depressed.

[55] Results for the circumplex negative scale (upset, afraid, unhappy, dissatisfied, sad and depressed) appear to be driven by the overrepresentation of upset, unhappiness, dissatisfaction and sadness in tweets. Within the circumplex positive scale (peaceful, at ease, happy, satisfied, proud and enthusiastic), overrepresentation of pride and enthusiasm in tweets appears to be canceled out by underrepresentation of peacefulness, ease, happiness and satisfaction (see Appendix 7).

[56] In addition, across all 32 unipolar emotion items with any positive or negative valence (excluding "pure" arousal items stirred up, surprised, sleepy and passive), there appears to be an association for the Facebook sample between whether an item is positive or negative and how over- or underrepresented it is in status updates compared to emotional experience on average. Items that are positive tend to be overrepresented in status updates ($r = .39$). No such association exists for the Twitter sample ($r = -.04$).

Table 5. Emotion in Facebook posts (SUFs) and other contexts (ESFs), according to ratings on the bipolar positive-negative item. Response options for the item range from 1 ("Very negative") to 7 ("Very positive"). *N* represents the number of participants with at least one response in the given context. The mean of participant averages is shown.

Emotion in context: Facebook

	N	Mean	*SD*
Feeling conveyed when interacting with others in person	312	5.29	1.01
Feeling in status updates	344	**5.24**	1.18
Experience when interacting with others in person	312	5.21	1.00
Experience when talking on Facebook	93	5.13	1.43
Experience (All contexts)	344	5.01	0.87
Experience when not using device	330	5.01	0.96
Experience when using device	321	4.92	0.99
Experience when browsing Facebook	239	4.92	1.07
Experience when not interacting with others in person	328	4.86	0.95

Table 6. Emotion in tweets (SUFs) and other contexts (ESFs), according to ratings on the bipolar positive-negative item. Response options for the item range from 1 ("Very negative") to 7 ("Very positive"). *N* represents the number of participants with at least one response in the given context. The mean of participant averages is shown.

Emotion in context: Twitter

	N	Mean	*SD*
Experience when talking on Twitter	53	5.27	1.34
Feeling conveyed when interacting with others in person	312	5.25	1.07
Experience when interacting with others in person	312	5.13	1.01
Experience when not using device	331	4.93	0.97
Experience (All contexts)	352	4.86	0.89
Experience when using device	332	4.86	0.96
Experience when browsing Twitter	217	4.86	1.16
Experience when not interacting with others in person	339	4.71	0.95
Feeling in status updates	352	**4.69**	1.21

asks participants to note when they are interacting with others in person, and the feeling they are conveying when doing so. The ESF also asks participants to note when they are using a device ("a computer, smartphone or tablet") and, when doing so, whether they are browsing or conversing on Facebook or Twitter. Sample means and standard deviations for the bipolar positive-negative item in the various contexts are shown in Tables 5 and 6.

Examining Table 5, Facebook posts appear to be similar in valence both to the emotional experience of interacting with others in person and to the feeling we convey in those interactions, on average. A t-test comparing Facebook posts ($M = 5.26$, $SD = 1.12$) to emotional experience in social settings ($M = 5.21$, $SD = 1.00$) is not significant, $t(311) = 0.74$, $p = .46$, $d = 0.05$, nor is a t-test comparing posts ($M = 5.26$, $SD = 1.12$) to the feeling we convey in social settings ($M = 5.29$, $SD = 1.01$), $t(311) = -0.42$, $p = .67$, $d = 0.03$[57]. These results suggest the positivity of Facebook posts is not abnormal relative to experience and expression in social settings generally.

Taking means in Table 5 at face value, however, implies some potential for Facebook to promote unfavorable social comparisons relative to social settings generally. If there is a relatively large gap between the positivity of Facebook posts ($M = 5.24$, $SD = 1.18$) and the experience of browsing Facebook ($M = 4.92$, $SD = 1.07$), as suggested by the .32 difference, viewing these posts while browsing Facebook may promote relatively more unfavorable social comparisons than social settings generally. Note that Table 5 shows a relatively smaller .08 difference between the feeling conveyed in social settings ($M = 5.29$, $SD = 1.01$) and the emotional experience of social settings ($M = 5.21$, $SD = 1.00$), suggesting social settings generally may have *less* potential for unfavorable comparisons[58]. While our experience browsing Facebook ($M = 4.94$, $SD = 1.05$) is less positive than our experience in social settings generally ($M = 5.16$, $SD = .94$), $t(223) = -3.88$, $p < .001$, $d = .22$, it does not appear to be less positive than the experience of using a device generally (the sample means are equivalent).

Tweets are interesting because they appear to rank *below* all other contexts in positivity. The tweets participants publish ($M = 4.71$, $SD = 1.17$) are less positive than their emotional experience in social settings ($M = 5.13$, $SD = 1.01$), $t(311) = -5.80$, $p < .0001$, $d = .39$, and their tweets ($M = 4.70$, $SD = 1.03$) are even less positive than their emotional experience browsing Twitter ($M = 4.86$, $SD = 1.16$), $t(216) = -1.97$, $p < .05$, $d = .14$. Taking means at face value, if the tweets we view while browsing Twitter are *less positive* on average than our emotional experience while browsing, it is possible Twitter promotes *favorable* rather than unfavorable social comparisons on average. In other words, while Facebook may be conducive to greater envy relative to social settings generally, Twitter may be conducive to envy *relief*.

Supporting the notion that browsing is the dominant use of social media, I find Facebook participants spend more than three times as many moments browsing Facebook as they do talking to others there, while Twitter participants spend nearly five times as many moments browsing Twitter as they do talking to others there[59].

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[57] T-tests are two-tailed.

[58] I attempt to avoid t-tests here and use the term "at face value" when discussing generalizations about the emotion contained in status updates and conveyed in social settings *compared to* the experience of browsing social media or being in social settings, respectively. This is because the t-tests would compare the emotions participants *themselves* convey in status updates or social settings, rather than receive from others. However, here I am proposing that the emotions participants convey in status updates and social settings *do generalize* to what they receive from others. If this is so, then there is a relatively larger positivity gap between the Facebook posts we browse and the experience of browsing Facebook (.32), on the one hand, and a relatively smaller positivity gap between the feeling we receive from others in social settings and our experience in social settings (.08), on the other. A larger positivity gap for Facebook suggests there may be greater potential for unfavorable social comparisons on the service compared to social settings generally.

[59] These percentages use data from individual ESFs just prior to generating the circumscribed date ranges.

Photos of the self and links to news articles

Finally, H2 predicted that status updates with photos of the participant would be more positive than other status updates, and RQ2 asked whether status updates with links to news articles would be more positive or negative compared to other status updates. For both the Facebook and Twitter samples, status updates with photos of the self are more positive than other status updates, while status updates with links to news articles are less positive. SUFs asked participants to note when a status update included a photo or link (see Appendix 3d).

On the bipolar positive-negative item, Facebook posts with photos of the self (M = 5.91, SD = 1.07) are more positive than other posts (M = 5.30, SD = 1.01), $t(97) = 5.35$, $p < .0001$, $d = 0.59$, as are tweets with photos of the self (M = 6.03, SD = 1.28) compared to other tweets (M = 4.86, SD = 1.38), $t(42) = 5.43$, $p < .0001$, $d = 0.89$. In contrast, Facebook posts with links to news articles (M = 4.30, SD = 1.49) are less positive than other posts (M = 4.97, SD = 1.01), $t(83) = -3.82$, $p < .001$, $d = 0.53$, as are tweets with links to news articles (M = 4.29, SD = 1.69) compared to other tweets (M = 4.95, SD = 1.22), $t(99) = -3.86$, $p < .001$, $d = .45$[60].

Using data from individual SUFs just prior to generating the circumscribed date ranges, an estimated 46% of Facebook posts contain a photo, of which 29% feature the participant, while only an estimated 20% of tweets contain a photo, of which 14% feature the participant. Overall, an estimated 14% of Facebook posts and 3% of tweets contain a photo that includes the participant. Photos of the self (and photos generally) may be an important driver of the positivity of Facebook posts and, perhaps, unfavorable social comparisons there.

Table 7. Average ratings on the bipolar positive-negative item for status updates (SUFs) with photos and links. Response options for the item range from 1 ("Very negative") to 7 ("Very positive"). *N* represents the number of participants with at least one SUF in the given context. The mean of participant averages is shown.

Status updates with photos and links

	Facebook posts			Tweets		
	N	Mean	*SD*	*N*	Mean	*SD*
All status updates	344	5.24	1.18	352	4.69	1.21
No photo	286	4.90	1.31	336	4.58	1.27
Has photo	267	5.63	1.15	210	5.14	1.39
Participant in photo	112	**5.90**	1.09	46	**6.00**	1.29
Participant not in photo	235	5.56	1.21	199	5.08	1.42
No link	324	5.31	1.20	331	4.69	1.24
Has link	182	4.88	1.33	183	4.82	1.44
Link is an article	93	**4.32**	1.50	107	**4.32**	1.69
Other link	127	5.25	1.16	130	5.20	1.34

[60] T-tests for photos of the self are one-tailed while tests for links to news articles are two-tailed.

For links, an estimated 22% of Facebook posts contain links, of which 38% point to a news article, while 22% of tweets also contain links, 45% of which point to a news article. Overall, 8% of Facebook posts and 10% of tweets contain links to news articles, which appear to reduce the positivity of Facebook posts and tweets overall.

Table 7 shows sample means in the final samples for the different types of status updates.

Arousal

H3 predicted that status updates would be more activated and less deactivated than day-to-day emotional experiences. This hypothesis is mostly supported for the Facebook and Twitter samples, particularly with regard to deactivated emotions. Facebook posts ($M = 1.86$, $SD = 0.54$) are marginally more activated than emotional experience ($M = 1.83$, $SD = 0.52$), $t(343) = 1.42$, $p < .10$, $d = 0.06$, and posts ($M = 2.06$, $SD = 0.53$) are significantly less deactivated than emotional experience ($M = 2.36$, $SD = 0.49$), $t(343) = –13.86$, $p < .0001$, $d = 0.60$. Meanwhile, tweets ($M = 1.94$, $SD = 0.55$) are more activated than emotional experience ($M = 1.86$, $SD = 0.51$), $t(351) = 3.44$, $p < .001$, $d = 0.15$, and tweets ($M = 2.20$, $SD = 0.57$) are also less deactivated than emotional experience ($M = 2.43$, $SD = 0.50$), $t(351) = –8.48$, $p < .0001$, $d = 0.44$[61]. Overall, the results suggest an arousal bias for status updates.

Is this arousal bias in status updates consistent across emotion items? The circumplex activated scale includes items excited, active, stirred up, surprised, anxious and nervous, and the deactivated scale includes items bored, tired, sleepy, passive, relaxed and calm. With regard to activation, while results suggest Facebook posts and tweets are significantly more excited, stirred up and surprised, results suggest they are in fact *less* active, anxious and nervous. With regard to deactivation, Facebook posts and tweets are consistently less deactivated across items in the circumplex deactivated scale (see Appendix 7).

These results largely support the notion that arousal increases information sharing (Berger, 2011; Berger & Milkman, 2012). Indeed, this appears to play out for deactivated states, which are underrepresented in status updates across the board. However, the results are not entirely consistent across activated states. While the underrepresentation of "active" in status updates may be an idiosyncrasy of the medium's lack of physical embodiment (see Chapter 3), results for "anxious" and "nervous" more clearly challenge the consistency of the arousal effect seen in Berger (2011) and Berger & Milkman (2012). So, too, does the overrepresentation of sadness in tweets, which Berger (2011) and Berger & Milkman (2012) suggest *suppresses* information sharing because it is lower in arousal. Other activated emotions the authors suggest stimulate information sharing — amusement, awe and anger — are indeed overrepresented in Facebook posts and tweets, however (see Appendix 7). On balance, results suggest an arousal bias for Facebook posts and tweets that generalizes fairly well across emotion items.

Specific emotions

H4 predicted that status updates will be more amused, angry, anxious, in awe, enthusiastic, excited, happy, inspired, loving, proud, satisfied and surprised than emotional experience because these specific emotions are more positive, more activated, or both. The hypothesis was supported in a majority of cases. As noted already, Facebook posts and tweets are indeed more

[61] T-tests are one-tailed because the hypothesis is directional.

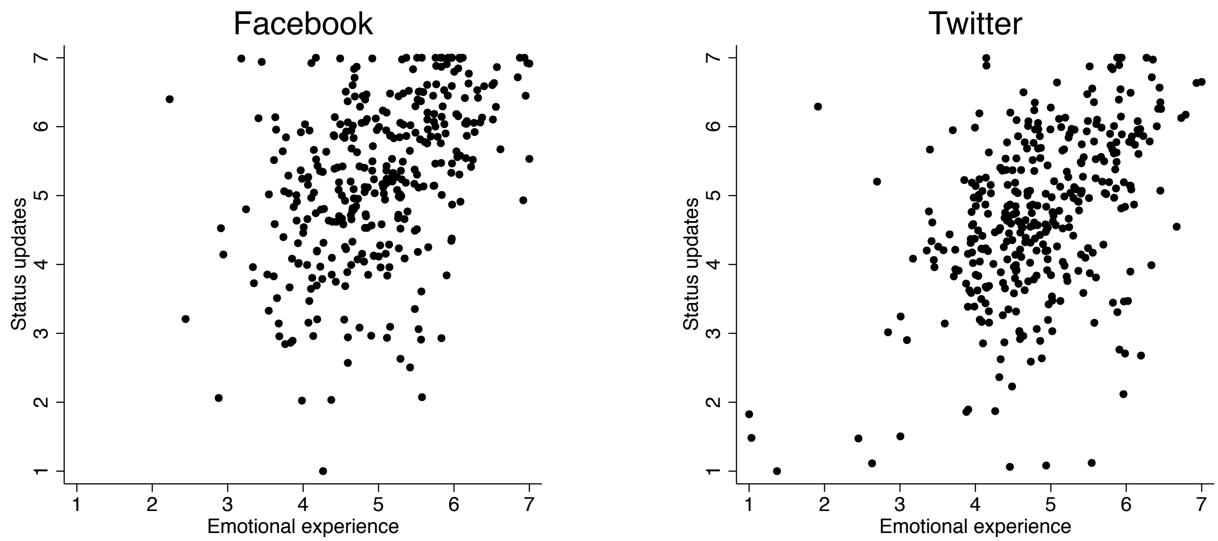

Figure 11. Participant averages for the bipolar positive-negative item are plotted for emotional experience (ESFs) and status updates (SUFs). Response options range from 1 ("Very negative") to 7 ("Very positive"). The SUF-ESF correlation for the positive-negative item is .44 for Facebook and .47 for Twitter (*p*s < .0001).

amused, angry, in awe, enthusiastic, excited, proud and surprised but are *less* anxious than emotional experience. Facebook posts and tweets are also both more inspired. However, while Facebook posts are happier and more loving, tweets are less happy and less loving. Further, Facebook posts are not more or less satisfied, while tweets are *less* satisfied.

Because they may signify a sense of failure or inferiority that people are unlikely to broadcast to others, H5 predicted that status updates would be less ashamed, dissatisfied, envious and unhappy than day-to-day emotional experience. This was not supported (see Appendix 7). Facebook posts are not more or less ashamed, dissatisfied or unhappy, and are only marginally less envious than emotional experience (p = .06). Tweets, in contrast, are not more or less ashamed or envious, but are *more* dissatisfied and unhappy than emotional experience. While the hypothesis may have performed poorly for shame and envy partly because they are rare emotions, dissatisfaction and unhappiness are relatively more prevalent emotions, and evidence does not suggest they are underrepresented in status updates.

Validity of inferences

Exploring correlations

In RQ3, I asked how well emotions in status updates over a given date range correlate with day-to-day emotional experience over the same period. In general, correlations are low-moderate. The SUF-ESF correlation for the bipolar positive-negative item is .44 for Facebook (p < .0001) and .47 for Twitter (p < .0001), and correlations for the 36 unipolar emotion items average .39 for Facebook and .43 for Twitter, using ipsatized responses (most correlations are highly significant). Figure 11 plots ESF and SUF averages on the bipolar positive-negative item for each participant and Appendix 8 lists correlation coefficients for emotion items and scales with raw and ipsatized data. Ipsatization attenuates correlations for the 36 unipolar items by an

Table 8. The five lowest and five highest ipsatized correlations between status updates (SUFs) and emotional experience (ESFs). The "Raw" and "Ipsat" columns list raw and ipsatized correlation coefficients, respectively.

Lowest and highest ipsatized correlations

Facebook					Twitter				
Emotion	Raw	*p*	Ipsat	*p*	Emotion	Raw	*p*	Ipsat	*p*
Amused	0.41	0.0000	0.15	0.0070	Angry	0.40	0.0000	0.18	0.0006
Surprised	0.49	0.0000	0.15	0.0070	Ashamed	0.43	0.0000	0.19	0.0003
Angry	0.44	0.0000	0.16	0.0033	Surprised	0.45	0.0000	0.25	0.0000
In Awe	0.56	0.0000	0.25	0.0000	Happy	0.45	0.0000	0.26	0.0000
Ashamed	0.57	0.0000	0.25	0.0000	Dissatisfied	0.48	0.0000	0.31	0.0000
...					...				
Loving	0.70	0.0000	0.54	0.0000	Sick	0.65	0.0000	0.55	0.0000
Passive	0.71	0.0000	0.56	0.0000	Passive	0.64	0.0000	0.57	0.0000
Peaceful	0.76	0.0000	0.59	0.0000	In Awe	0.65	0.0000	0.60	0.0000
At Ease	0.73	0.0000	0.62	0.0000	Depressed	0.71	0.0000	0.60	0.0000
Lonely	0.74	0.0000	0.62	0.0000	Lonely	0.70	0.0000	0.62	0.0000

average of .21 in the Facebook sample and .14 in the Twitter sample, which suggests the influence of response style on correlations is not insubstantial[62].

Table 8 lists the five highest and five lowest correlations among the 36 unipolar emotion items, using ipsatized data. Correlations range in size from a minimum of .15 for "amused" in the Facebook sample to a maximum of .62 for "lonely" in both the Facebook and Twitter samples. Across the two samples, status updates appear to be especially poor predictors of anger, surprise and shame in day-to-day emotional life and especially good predictors of loneliness and passiveness. Tweets also appear to be good predictors of feeling depressed.

On an exploratory basis, SUF-ESF correlations appear to be slightly higher for positive than negative emotions. In the shortened, 5-item PANAS scales and the 6-item circumplex positive and negative scales (described in Chapter 3), differences between correlations for positive and negative scales are .05 and .15 for PANAS in the Facebook and Twitter samples, respectively, and .08 for the circumplex scales in both samples, using ipsatized data (see Appendix 8)[63]. There also appears to be a slight association between how over- or underrepresented an emotion is in

[62] Without ipsatization, correlations for the 36 unipolar emotion items average .60 in the Facebook sample and .57 in the Twitter sample (all *p*s < .0001). Excluding the circumplex activated scale, attenuation of correlation coefficients due to ipsatization ranges by item or scale from .08 to .35 in the Facebook sample and from .05 to .25 in the Twitter sample. Following ipsatization, correlation coefficients for the circumplex activated scale decline by .58 and .46 in the Facebook and Twitter samples, respectively.

[63] On average, across all 32 unipolar emotion items with any positive or negative valence (excluding "pure" arousal items stirred up, surprised, sleepy and passive), correlations for positive items are higher than negative items by .02 and .06 in the Facebook and Twitter samples, respectively, using ipsatized data.

status updates and how strongly correlated it is with emotional experience; unipolar items that are overrepresented in status updates tend to have a lower correlation with emotional experience. The correlation between SUF-ESF sample mean differences and SUF-ESF item correlations is –.39 for the Facebook sample and –.45 for the Twitter sample, using raw, non-ipsatized data[64].

Moderators

Hypotheses 6-25 and research questions 4 and 5 regard the possible moderating effects of individual traits, concerns and other factors on the association between negative emotional experience and negative emotional expression in status updates. Hypotheses 6-14 and 23-24 propose that the individual characteristic will *weaken* the SUF-ESF association, while hypotheses 15-22 and 25 propose that the characteristic will *strengthen* the association. Overall, hypotheses receive mixed support, at best, with 9 of 23 characteristics and only 4 of 23 characteristics exhibiting a statistically significant moderating effect in the hypothesized direction for Facebook and Twitter, respectively. However, evidence better supports the general point that status updates may be better for some individuals than others as a measure of emotional experience. Of the 26 individual characteristics examined (including 3 characteristics with no hypothesis), 18 and 13 exhibit a statistically significant moderating effect for Facebook and Twitter, respectively.

Table 9 visualizes the results of the moderation analyses, which regress negative emotional experience, the dependent variable, on negative emotion in status updates and the proposed moderators, the independent variables. Negative emotion is measured with two scales, the shortened 5-item PANAS negative activation scale and the 6-item circumplex negative affect scale (see Chapter 3). I perform three regressions for each scale for the Facebook and Twitter samples, for a total of 12 regressions per proposed moderator[65]. In Table 9, proposed moderators are grouped by their hypothesized strengthening or weakening effect on the SUF-ESF association. A blue "–" indicates a significant *weakening* effect for the given moderator in results, while a gold "+" indicates a significant *strengthening* effect in results. The "result" column summarizes whether evidence of an effect was found for a proposed moderator.

In columns labeled with the number 1, a basic moderation regression is performed with (a) the SUF negative emotion scale, (b) the proposed moderator and (c) the interaction all predicting the ESF negative emotion scale. In columns 2 and 3, control interactions are added for ESFs per day and both ESFs and SUFs per day, respectively, to mitigate the two variables as possible confounds of the moderation analyses. Of the two controls, ESFs per day is the more important; as discussed earlier in this chapter, completing more ESFs per day may improve the SUF-ESF association because a better measure of emotional experience was taken. If proposed moderators are associated with completing more (or fewer) ESFs per day, then observed effects for the proposed moderators may be due to this diligence (or lack thereof), rather than the proposed moderators themselves. To mitigate this, I include ESFs per day as an additional control interaction. The control does indeed reduce some significant moderation effects to marginal or non-significance, including self-monitoring in the Facebook sample and negative expressivity in

[64] The tendency for overrepresented items to have lower SUF-ESF correlations does not appear to be explained entirely by differences in variance; overrepresented items generally have higher variance in SUFs for Facebook, but lower variance in ESFs for Twitter.

[65] All continuous (non-binary) independent variables are centered prior to entry in regressions.

Table 9. Significant coefficients ($p < .05$) for moderators of the SUF-ESF association for negative emotion. Regression (1) includes the moderator alone, (2) adds an ESFs per day interaction and (3) adds ESFs and SUFs per day interactions. Not shown: log of friends and log of followers ($ps > .1$). See Appendix 9 for the full regressions.

	Facebook							Twitter						
Hypothesis	PANAS NA			CIRC NA				PANAS NA			CIRC NA			
Weakens –	1	2	3	1	2	3	**Result**	1	2	3	1	2	3	**Result**
Self-Monitoring	–	-m	–	–	-m	–	Weak							ns
Other-Directedness	–	–	–	–	–	–	Weak							ns
Social Desirability	–	–	–				Weak							ns
Conscientiousness	–	–	–	–	–	–	Weak			–				ns
Concern for Info. Privacy	–	–	–	–	-m		Weak				+	+	+m	Stren
Posting Concerns	–	–	–	–	–		Weak							ns
Content Impress. Mgmt.							ns	–	–					Weak
Expressive Suppression	-m	-m					ns							ns
Depression—Open	+m	+m	+m	+	+m	+	Stren	+	+	+	+	+	+	Stren
Depression—Close						+m	ns	+	+	+	+	+	+m	Stren
Neuroticism	+	+	+	+	+	+	Stren	+	+	+	+	+	+m	Stren
Uses Full Name	–			–	–	–	Weak	-m						ns
In Profile Picture							ns						+m	ns
Public Status Updates							ns					+m	+m	ns
Strengthens +							**Result**							**Result**
Negative Expressivity	+	+	+				Stren	+	+m	+	+m	+m	+m	Stren
Venting							ns	+	+	+				Stren
Emotional Support	–	–	–	–	–	–	Weak	–	–	–				Weak
Extraversion	+m						ns	–	–	–	–	–	-m	Weak
Life Satisfaction—Open	-m						ns	–	–	–		-m	-m	Weak
Life Satisfaction—Close	-m	–					Weak	–	–	–	-m	–	-m	Weak
Openness		-m		–	–	–	Weak	–	–	–	–	–	-m	Weak
Female	–	–	-m	–	-m		Weak							ns
Age							ns			-m				ns
SUFs Per Day	+	+	n/a	+	+	n/a	Stren	+	+	n/a	+	+	n/a	Stren
No hypothesis							**Result**							**Result**
Agreeableness	–	–	-m	–	–	–	Weak	–	–	–		-m	-m	Weak
Income	+	+	+	+	+	+	Stren	–	–	–			-m	Weak
College Degree Holder	+	+	+	+	+	+	Stren							ns

the Twitter sample (for PANAS negative activation). Significance returns for these when SUFs per day is also included as a control interaction, however.

The role of SUFs per day as a control interaction is open to some interpretation. Unlike ESFs per day, which is included to mitigate a specific methodological problem, the possible "confounding" effect of SUFs per day can be interpreted as a finding. Where significant moderation effects in columns 1 and 2 are reduced to marginal or non-significance in column 3, we can infer that the observed moderating effect for the individual trait may be due to the rate with which participants publish status updates. For the purposes of this dissertation's research questions, we may still conclude that status updates for individuals with the trait are a better (or worse) predictor of emotional experience. However, the moderation effect will be due to the rate with which they publish status updates rather than some other behavior associated with the trait. Where including SUFs per day as a control improves a marginal or insignificant moderation effect to significance, a possible interpretation is that behavior otherwise associated with a moderation effect is counteracted by the frequency with which participants publish status updates (this appears to be the case for self-monitoring in the Facebook sample and negative expressivity in the Twitter sample, for example). While this improvement may be interesting for social psychological reasons, it is not as interesting for the practical purpose of inferring emotional experience from status updates. In these cases, status updates are not shown to vary in validity, according to the trait, as a measure of emotional experience.

Although hypotheses with respect to moderating effects receive only mixed support, the overall pattern of results seems to cohere with results regarding the emotional profiles of Facebook posts and tweets, which suggest Facebook posts are more positive and tweets more negative than day-to-day emotional experience, on average. Overall, results for moderation analyses with the Facebook sample are more consistent with a situation that prescribes positivity, therefore inhibiting the expression of negative emotion, while results with the Twitter sample are more consistent with a situation that is permissive of negative emotion, therefore disinhibiting its expression. Appendix 9 lists the full regression results.

Notably, the results suggest Facebook posts exhibit worse performance as a measure of negative emotional experience for individuals higher in attention to social appropriateness, self-presentation and privacy, including other-directedness (and, marginally, self-monitoring), social desirability, conscientiousness, concern for information privacy and posting concerns. Results for other-directedness (a subscale of self-monitoring), conscientiousness and posting concerns appear to be particularly robust (see Table 9 and Appendix 9a). In contrast, tweets exhibit better performance as a measure of negative emotional experience for individuals higher in traits generally associated with negative emotionality and with *lower* self-disclosure in social settings, including depression, neuroticism and introversion. Again, these are among the most robust results for the Twitter sample (see Table 9 and Appendix 9b). Thus, Facebook appears to be relatively more inhibiting of negative emotion while Twitter appears to be relatively more disinhibiting. In particular, the results for Twitter suggest the service may be viewed as something of an emotional outlet for people who are more depressed, neurotic and introverted, whereas social settings generally may be more inhibiting for them.

In the Twitter sample, consistent with this larger pattern, though less clearly, are results suggesting tweets exhibit better performance for individuals who are less satisfied with life, more disagreeable, higher in negative expressivity, lower income and who cope with stress by venting their negative emotions. Characteristics associated with attention to social appropriateness, self-presentation and privacy also do not moderate the SUF-ESF association[66], except with regard to content impression management and concern for information privacy. While content impression management may weaken the SUF-ESF association for the PANAS negative activation scale (contrary to the larger pattern of disinhibition in the Twitter sample), concern for information privacy may *strengthen* the association, which is unexpected but not inconsistent with the larger pattern of results.

Results for the Facebook sample are more nuanced overall than for the Twitter sample, which suggests Facebook may straddle inhibition and disinhibition with regard to negative emotion to some extent[67]. Facebook posts perform better for individuals who are more neurotic and disagreeable and, perhaps to some extent, for people who are more depressed and less satisfied with life. Negative expressivity is also a moderator for the PANAS negative activation scale, which might be taken as a sign of the power of this disposition across situations, or a sign that Facebook straddles inhibition and disinhibition for negative emotion to some extent. Perhaps more consistent with the larger pattern of results, Facebook posts exhibit worse performance as a measure of negative emotional experience for lower income and less educated individuals. Surprisingly, they also perform worse with respect to negative emotion for women.

Contrary to the tentative hypothesis, Facebook posts and tweets appear to perform worse for people who are higher in openness. More surprisingly, they also exhibit worse performance for people who tend to cope with stress by seeking emotional support from others; perhaps these individuals simply do not seek emotional support through disclosures in Facebook posts or tweets because they receive it elsewhere. Also contrary to hypotheses, expressive suppression and age are not significant moderators in either the Facebook or Twitter sample, and hypotheses related to social media presence also perform poorly (these are the four variables related to whether participants use their full names in their profiles, feature themselves in their profile photos, publish status updates publicly or have a large number of friends or followers[68]). Only the use of one's full name is a significant moderator; in the Facebook sample, this weakens the SUF-ESF association, consistent with the original hypothesis and the larger pattern of results.

Finally, as a practical matter, the use of status updates to infer negative emotional experience does indeed improve in performance for people who publish status updates more frequently (see Table 9 and Appendix 9). While a somewhat obvious result, it confirms empirically that the rate at which participants publish status updates is an important consideration for this research area.

Sentiment analysis

Thus far, results suggest status updates have low-moderate validity as a measure of day-to-day emotional experience on average, that validity varies according to the emotion under

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[66] This does not appear to be due to exceptional descriptive statistics for these traits in the Twitter sample; means and standard deviations are within range of those in the Facebook sample (see Appendix 5).

[67] Along these lines, t-tests in Appendix 7a suggest that, among negative emotions, disgust and anger are significantly overrepresented in Facebook posts relative to emotional experience. This perhaps also suggests some disinhibition of negative emotion within the larger pattern of inhibition for Facebook.

[68] Log of friends and log of followers are omitted from Table 9 due to space limitations, but are presented in Appendix 9 after results for the "public status updates" variable.

investigation, and that individual differences like self-presentation and privacy concerns can positively or negatively impact validity. Thus, there is reason for researchers to proceed with caution when using status updates to infer emotional experience and to consider how effect size estimates or other elements of the research may be affected by the choice itself of status updates as a measure, by the emotion studied or by the composition of the sample.

In practice, researchers also use sentiment analysis of status update texts to assess the emotional contents of status updates, which adds a further possible point of departure for validity. Although the emotional contents of status updates may have a low-moderate correlation with emotional experience on average, sentiment analysis will increasingly dissipate this association the worse it performs as a measure of emotion in status updates. In this section, I examine the validity of popular sentiment analysis program Linguistic Inquiry and Word Count (LIWC), which has five outputs for emotion: positive emotion, negative emotion, and specific outputs for anger, anxiety and sadness, which comprise the negative emotion output. As described in previous chapters, LIWC is a dictionary method and outputs the percentage of words in a text that match words associated in the dictionary with a particular emotion. I use the most recent 2015 version of LIWC (Pennebaker et al., 2015).

RQ6 and RQ7 asked about the validity of LIWC as a measure of the emotional contents of status updates and as a measure of day-to-day emotional experience, respectively. Overall, results suggest LIWC has low validity as a measure of the emotional contents of status updates and little to no validity as a measure of day-to-day emotional experience.

The left four columns of Table 10 list correlations between LIWC outputs and participant ratings for corresponding items and scales in individual SUFs, using SUF data just prior to generating the circumscribed date ranges (N = 3,973 and 3,776 for the Facebook and Twitter samples, respectively). The highest correlation is achieved when LIWC outputs for positive and negative emotion are combined (by subtracting the negative from the positive output) and then associated with participant ratings on the bipolar positive-negative item, at .19 and .21 for the Facebook and Twitter samples, respectively (ps < .0001). LIWC negative outputs perform somewhat better than positive outputs generally, though correlations are close to zero for anxiety. Among positive items and scales, only “happy” reaches a correlation of .10 or higher with the LIWC positive output in the Twitter sample, and no positive item or scale reaches a correlation of .10 with the positive output in the Facebook sample (see Appendix 10). Facebook posts in this data have a median of 8 words (M = 13), while tweets have a median of 13 words (M = 14), according to LIWC[69]. A median of just 1 word in these posts and tweets is associated with an emotion in the LIWC dictionary (M = .99 and .90, respectively).

In some cases, correlations improve when Facebook posts and tweets are pooled for each participant over the circumscribed date ranges. As shown in the right four columns of Table 10, correlations between the combined LIWC output and the bipolar positive-negative item rise to .27 for both the Facebook and Twitter samples (ps < .0001). Correlations also rise for items “happy,” “angry,” “hostile” and “sad” across the two samples, but remain close to zero for “anxious” and “nervous.” Pooled status update texts have a median of 52 words (M = 75) in the Facebook sample and a median of 105 words (M = 108) in the Twitter sample, according to

[69] In comparison, Kramer (2010a) reports a mean of 9 words per Facebook post.

Table 10. Correlations of LIWC outputs with participant ratings in individual SUFs (the left four columns) and pooled SUFs across the circumscribed date ranges (the right four columns). The bipolar positive-negative item is associated with a combined LIWC output (subtracting the negative from the positive output), while PA and NA scales are associated with the positive and negative outputs separately. "Happy" and "satisfied" are associated with the positive output, "angry" and "hostile" with the anger output, "anxious" and "nervous" with the anxiety output, and "sad" and "depressed" with the sadness output.

	Individual Status Updates				Pooled Status Updates			
	Facebook (N = 3,973)		Twitter (N = 3,776)		Facebook (N = 344)		Twitter (N = 352)	
Emotion	***r***	***p***	***r***	***p***	***r***	***p***	***r***	***p***
Positive-Negative	0.19	0.0000	0.21	0.0000	0.27	0.0000	0.27	0.0000
PANAS PA	0.04	0.0051	0.07	0.0001	0.07	0.2169	0.02	0.7684
PANAS NA	0.14	0.0000	0.14	0.0000	0.07	0.1679	0.22	0.0000
Circumplex PA	0.07	0.0000	0.09	0.0000	0.10	0.0697	0.16	0.0035
Circumplex NA	0.17	0.0742	0.16	0.0000	0.10	0.0690	0.21	0.0001
Happy	0.07	0.0000	0.10	0.0000	0.13	0.0180	0.19	0.0004
Satisfied	0.08	0.0000	0.08	0.0000	0.03	0.6107	0.20	0.0001
Angry	0.10	0.0000	0.16	0.0000	0.17	0.0016	0.28	0.0000
Hostile	0.08	0.0000	0.14	0.0000	0.16	0.0032	0.32	0.0000
Anxious	0.03	0.0408	0.03	0.0335	-0.01	0.8089	0.04	0.3928
Nervous	0.05	0.0010	0.05	0.0016	0.04	0.4704	0.04	0.4532
Sad	0.13	0.0000	0.13	0.0000	0.17	0.0013	0.21	0.0001
Depressed	0.08	0.0000	0.08	0.0000	0.03	0.5708	0.15	0.0043

LIWC. Of these, a median of 4 words in posts (M = 5.53) and 6 words in tweets (M = 7.03) is associated with an emotion in the LIWC dictionary.

Putting the pieces together, how valid is LIWC with status updates as a measure of day-to-day emotional experience? The left-hand side of Table 11 lists correlations between LIWC with status updates and corresponding emotion items and scales. All correlations in Table 11 are low, and no item reaches statistical significance[70]. As an added assessment, the right-hand side of Table 11 shows correlations between LIWC outputs and corresponding scales from the opening and closing questionnaires, including PANAS (dispositional form), Satisfaction with Life, CESD-R Depression and Extraversion and Neuroticism, which are the more affective traits in the Big Five personality taxonomy (Gross & John, 1995). Again, correlations are low and generally lacking in statistical significance, though traditional alpha levels of statistical significance are

[70] Although LIWC outputs do not correlate significantly with the most logical ESF items and scales, a handful of ESF items in the Twitter sample do correlate at traditional alpha levels of statistical significance with LIWC positive and negative emotion outputs, as shown in Appendix 10.

Table 11. Correlations of LIWC outputs with corresponding items and scales in ESFs (left) and the opening and closing questionnaires (right). Associations of ESF items and scales with LIWC outputs are the same as in Table 10. For questionnaire scales, Satisfaction with Life is associated with the LIWC combined output (subtracting the negative from the positive output), the CESD-R Depression scale is associated with the LIWC sadness output, and extraversion and neuroticism are associated with LIWC's positive and negative outputs, respectively.

	Facebook		Twitter	
ESF	***r***	***p***	***r***	***p***
Positive-Negative	0.09	0.1047	0.06	0.2999
PANAS PA	-0.05	0.3887	-0.06	0.2965
PANAS NA	0.01	0.8871	0.06	0.2507
Circumplex PA	0.03	0.6148	0.06	0.2608
Circumplex NA	0.02	0.7006	0.06	0.2789
Happy	0.07	0.2204	0.08	0.1135
Satisfied	0.05	0.3394	0.05	0.3449
Angry	0.10	0.0718	0.03	0.6219
Hostile	0.07	0.2245	0.04	0.4442
Anxious	0.00	0.9651	0.03	0.6278
Nervous	0.00	0.9483	0.04	0.4017
Sad	0.01	0.9035	0.07	0.2082
Depressed	-0.04	0.4339	0.09	0.1018

	Facebook		Twitter	
Questionnaire	***r***	***p***	***r***	***p***
PANAS PA (Opening)	-0.04	0.5190	0.00	0.9794
PANAS NA (Opening)	-0.03	0.6308	**0.16**	0.0029
Life Satisfaction (Opening)	0.09	0.1137	0.09	0.1056
Life Satisfaction (Closing)	0.09	0.1042	0.10	0.0553
Depression (Opening)	-0.03	0.6069	**0.14**	0.0068
Depression (Closing)	-0.04	0.4682	0.08	0.1198
Extraversion (Opening)	0.01	0.8333	-0.06	0.2457
Neuroticism (Opening)	0.03	0.6204	0.06	0.2486

reached with the PANAS negative activation scale and the depression scale in the opening questionnaire for the Twitter sample only.

Overall, evidence suggests LIWC almost completely dissipates the low-moderate association between status updates and emotional experience. Coupled with previous evidence regarding the poor convergent validity of LIWC and status updates with satisfaction with life and dispositional PANAS (Kramer, 2010a; Liu et al., 2015; Beasley & Mason, 2015), this suggests LIWC with status updates may have little utility for inferring day-to-day emotional experience or emotional dispositions. Of course, other sentiment analysis procedures or even other dictionary methods, like LabMT, may show better validity at the individual level. This validity must be shown rather than assumed, however.

The browsing experience

Exploring sample means

As with status updates and emotional experience as a whole, the experience of browsing social media appears to be characterized predominantly by calm, relaxation and other positive, deactivated emotions, as well as happiness. Tables 12 and 13 list the top five emotions of the Facebook and Twitter browsing experiences, respectively, as well as the top five emotions for

Table 12. Top five emotions for Facebook participants while browsing Facebook, in contexts other than browsing Facebook, while interacting with others in person, and during device uses other than browsing Facebook.

Top emotions: Facebook participants											
Browsing Facebook			All Other ESFs			Interacting in Person			Other Device Uses		
	Mean	*SD*		Mean	*SD*		Mean	*SD*		Mean	*SD*
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

Table 13. Top five emotions for Twitter participants while browsing Twitter, in contexts other than browsing Twitter, while interacting with others in person, and during device uses other than browsing Twitter.

Top emotions: Twitter participants											
Browsing Twitter			All Other ESFs			Interacting in Person			Other Device Uses		
	Mean	*SD*		Mean	*SD*		Mean	*SD*		Mean	*SD*
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

(a) all other emotional experiences (all ESFs except those in which the participant was browsing the respective service), (b) in-person social interactions, and (c) 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 aid in 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. For analyses related to the browsing experience, I use participant averages from all valid ESFs, which are the ESFs remaining just prior to generating the circumscribed date ranges ($N = 362$ and 416 for the Facebook and Twitter samples, respectively). As noted above, Facebook participants completed a median of 23 valid ESFs and Twitter participants completed a median 22 valid ESFs.

With respect to sample means for the 36 unipolar items, the emotional experience of browsing social media is very similar to the comparator contexts. 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. Again, response options for the 36 unipolar emotion items range from 1 ("Not at all") to 5 ("Extremely") [71].

Across all four contexts, "calm" has the highest average rating, which is near the midpoint of the response scale, or a moderate rating (see Tables 12 and 13). 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 11-13).

As an alternate view of the emotional profile of browsing social media, Tables 14 and 15 list 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 two-tailed; Appendices 11-13 list the full results). Across all three comparisons in both samples, the browsing experience appears 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 (ps < .0001). Browsing Twitter also appears to be 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 top differences are the same in comparison with other device uses. When ranking by Cohen's d in the Twitter sample, the top five 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, $p < .01$).

Appendices 11-13 show sample means and t-tests of differences between browsing and the comparator contexts for emotion items and scales. Looking outside 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).

[71] As noted above in the first analysis, status updates and emotional experience are also very similar with respect to sample means. Sample mean correlations are .93 for both the Facebook and Twitter samples, and average absolute sample mean differences are .16 and .17, respectively.

Table 14. Top five sample mean differences between the emotional experience of browsing Facebook and the other listed contexts. T-tests are two-tailed (see Appendices 11-13). In the top five differences by Cohen's *d*, "stirred up" replaces "sleepy" vs. all other ESFs (people feel less stirred up while browsing Facebook), "excited" and "lonely" replace "loving" and "enthusiastic" vs. in-person interactions (people feel less excited and more lonely while browsing Facebook), and top differences are the same in comparison with other device uses.

Top differences: Browsing Facebook								
vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*		Diff	*p*		Diff	*p*
(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

Table 15. Top five sample mean differences between the emotional experience of browsing Twitter and the other listed contexts. T-tests are two-tailed (see Appendices 11-13). Sorting by Cohen's *d*, top five differences are the same in the comparison with all other ESFs, "happy" and "lonely" replace "loving" and "tired" vs. in-person interactions (people feel less happy and more lonely while browsing Twitter), and "envious" replaces "at ease" vs. other device uses (people feel less envious while browsing Twitter).

Top differences: Browsing Twitter								
vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*		Diff	*p*		Diff	*p*
(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

Valence and arousal

RQ8 and RQ9 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-person social settings and other device uses. Tables 16 and 17 show sample mean differences, *p*-values (for two-tailed t-tests) and Cohen's *d* effect sizes for the comparisons, and Appendices 11-13 display the full results. As in analyses of the emotional profile of status updates, comparisons here employ the bipolar positive-negative item (with a seven-point response scale) and the circumplex emotion 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

Table 16. Valence and arousal while browsing Facebook compared to the other listed contexts, as measured by the bipolar positive-negative item and the four circumplex emotion scales. T-tests are two-tailed (see Appendices 11-13). Browsing Facebook is consistently characterized by lower activation and higher deactivation.

Valence and arousal differences: Facebook

	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*	*d*	Diff	*p*	*d*	Diff	*p*	*d*
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

Table 17. Valence and arousal while browsing Twitter compared to the other listed contexts, as measured by the bipolar positive-negative item and the four circumplex emotion scales. T-tests are two-tailed (see Appendices 11-13). Browsing Twitter is consistently characterized by lower activation and higher deactivation.

Valence and arousal differences: Twitter

	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*	*d*	Diff	*p*	*d*	Diff	*p*	*d*
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

the bipolar positive-negative item, while browsing Twitter is more negative according to the circumplex negative emotion scale (ps < .05). The tilt away from positive emotion and toward negative emotion is more pronounced compared to in-person social settings, and is non-existent compared to other device uses for both the Facebook and Twitter samples.

While findings for valence are mixed across comparators, results for arousal are 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 Tables 16 and 17 and Appendices 11-13).

Envy and flow experience
Hypotheses 26 and 27 predicted that browsing social media would be characterized by envy as well as emotions indicative of flow, including enthusiasm, excitement and interest, and less

Table 18. Hypothesized differences for specific emotions between browsing Facebook and comparator contexts. "Bored" is in parentheses because it was hypothesized to be lower while browsing Facebook; other emotions were hypothesized to be higher while browsing Facebook. T-tests are one-tailed because the hypotheses are directional (see Appendices 11-13). Limited support is found for the envy hypothesis only.

Hypothesized differences: Facebook

	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*	*d*	Diff	*p*	*d*	Diff	*p*	*d*
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

Table 19. Hypothesized differences for specific emotions between browsing Twitter and comparator contexts. "Bored" is in parentheses because it was hypothesized to be lower while browsing Twitter; other emotions were hypothesized to be higher while browsing Twitter. T-tests are one-tailed because the hypotheses are directional (see Appendices 11-13). Limited support is found for the interest hypothesis only.

Hypothesized differences: Twitter

	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*	*d*	Diff	*p*	*d*	Diff	*p*	*d*
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

boredom[72]. 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 Tables 18 and 19; 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* flow than comparators. For Twitter, results are 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

[72] As noted in Chapter 3, flow is typically accompanied by positive, high-arousal feelings such as these (Hektner et al., 2007, e.g. pp. 142-147). The emotional experience of flow is referred to as "flow experience."

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. In an earlier discussion, I noted that there seemed to be a relatively larger difference between the positivity of Facebook posts and the emotional experience of browsing Facebook, on the one hand, and a relatively smaller positivity difference between the feeling conveyed in in-person social settings and our emotional experience in those social settings, on the other. The difference in positivity gaps implies greater potential for envy while browsing Facebook than in in-person social settings — if, indeed, such positivity gaps materialize in the emotions we receive from others and experience in the two contexts.

Supporting this proposal, results suggest that the emotional experience of browsing Facebook may be characterized by higher envy compared to in-person social interactions ($p < .05$), though envy is higher by only 3% over in-person social interactions, on average. Browsing Facebook is also characterized by marginally greater envy compared to all other ESFs ($p = .08$), and there is no difference compared to other device uses for the Facebook sample. If browsing Facebook is envy-inducing, Twitter may be envy *relieving*. In keeping with the finding that tweets are less positive than emotional experience on average, results suggest that browsing Twitter may be accompanied by a small reduction in envy compared to other device uses, around –5% ($p < .01$). 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 11-13 list the full results.

Emotional contagion?
Notably, results for the browsing experience so far seem to provide little support for the theory of emotional contagion, especially with respect to the Facebook sample. Whereas results for Facebook posts suggest they are more positive and less deactivated, and are higher in activated emotions like enthusiasm and excitement compared to day-to-day emotional experience, results for browsing Facebook suggest an emotional response that is nearly the opposite: perhaps more negative, and clearly more deactivated and less activated, with lower levels of enthusiasm and excitement compared to all other emotional experiences. If browsing Facebook consists largely of viewing Facebook posts, results suggest little potency for the theory of emotional contagion on Facebook. Similarly, while tweets and the Twitter browsing experience share a tilt toward negative emotion, tweets are more activated and less deactivated compared to day-to-day emotional experience, while browsing Twitter appears to be *less* activated and *more* deactivated. Instead of whipping people into a frenzy, browsing social media seems to have a dampening effect, on average.

To explore this further, I modified the final "date range" datasets to exclude ESFs in which the participant was browsing the respective service. With these modified datasets, then, status updates can be compared to all ESFs excluding those where the participant was browsing the respective service, which is more equivalent to the comparison between browsing and all other ESFs[73]. If emotional contagion is predominant, we should observe *similar* differences between

[73] The comparison is more apples-to-apples but still not entirely apples-to-apples because SUFs are compared with non-browsing ESFs over the circumscribed date ranges, while comparisons between browsing and non-browsing

Table 20. Browsing Facebook and the other listed contexts are compared for the top five over- or underrepresented emotions in Facebook posts. Items in parentheses are underrepresented in posts. The emotional contagion hypothesis would predict these items would be similarly over- or underrepresented in the browsing experience. However, no evidence for emotional contagion is found for these emotions; often, the reverse is found. T-tests are one-tailed.

Emotional contagion hypothesis: Facebook

	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*	*d*	Diff	*p*	*d*	Diff	*p*	*d*
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

Table 21. Browsing Twitter and the other listed contexts are compared for the top five over- or underrepresented emotions in tweets. "Tired" is underrepresented in tweets. The emotional contagion hypothesis would predict these items would be similarly over- or underrepresented in the browsing experience. However, no evidence for emotional contagion is found for these emotions; often, the reverse is found. T-tests are one-tailed.

Emotional contagion hypothesis: Twitter

	vs. All Other ESFs			vs. Interacting in Person			vs. Other Device Uses		
	Diff	*p*	*d*	Diff	*p*	*d*	Diff	*p*	*d*
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

status updates and non-browsing ESFs to the differences we observe between browsing and non-browsing ESFs. If differences are *dissimilar*, some other dynamic predominates.

In the modified "date range" datasets, as shown in Appendix 14, Facebook posts continue to be more positive and less deactivated compared to non-browsing ESFs (excluding ESFs in which the participant was browsing Facebook), though there is no longer a marginal difference for activation. Similarly, tweets continue to be relatively more negative, more activated and less

ESFs cover the entire experience sampling week. The comparison is meant to be exploratory, however, rather than exact. SUFs here also 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 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.

deactivated in the modified comparisons with non-browsing ESFs (excluding ESFs in which the participant was browsing Twitter). Top five differences between SUF and ESF sample means are also preserved: Facebook posts are more amused, in awe and proud, and less tired and sleepy, while tweets are more amused, in awe, stirred up and surprised, and less tired.

As illustrated in Tables 20 and 21, however, the experiences of browsing Facebook and Twitter are characterized by none of these top five differences for status updates. 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 Facebook posts and tweets (see Appendix 14), is not significantly overrepresented in the experience of browsing either service (see Appendix 11). 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, compared to non-browsing ESFs.

Expanding this analysis to sample mean differences across all 36 unipolar emotion items, there is in fact, 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 analysis suggests we are *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. If Facebook posts and tweets are indeed more excited, awed, proud and surprised, and less sleepy and tired, for example, it is notable we do not feel more excited, awed, proud or surprised when we view them — but, rather, more sleepy and tired.

In the next chapter, I discuss the results.

Chapter 5. Discussion

This dissertation has presented three analyses about the emotions we express in social media, about what can be inferred about our emotional lives based on how we express ourselves, and about the emotional experience of browsing social media. Using data from two samples of participants from two different services, a Facebook sample and a Twitter sample, these analyses relate the emotions participants report expressing in their most recent status updates to the emotions they report experiencing in a sample of moments from their daily lives. In offering the literature's first known effort to relate status updates and emotional experience, the goal was to help resolve conflicts in the literature, and to help establish basic descriptive facts about emotion in social media that have remained underdeveloped.

Summary of findings

What did we find? In the first analysis, I compare status updates and day-to-day emotional experience to reveal the distinct emotional profile of status updates and to understand how they might be a biased representation of emotional life. In hypotheses, I predicted that status updates would be more positive and more aroused than emotional experience as a whole, but I left a comparison of status updates and offline social interactions — the emotions we experience and express with others in person — as a research question. Overall, I find that the emotions we express in status updates *reflect* the emotions we experience in day-to-day emotional life, with a high correlation between sample means for status updates and emotional experience across the 36 unipolar emotion items. On average, pleasant, deactivated emotions like calm, relaxation and happiness predominate in emotional experience — and, perhaps counterintuitively, they predominate in status updates as well.

I do, however, find differences suggesting status updates have some modest biases, on average, as a representation of emotional life. In line with hypotheses, Facebook posts are more positive and less deactivated than day-to-day emotional experience and, across a range of emotion items — including amusement, awe, enthusiasm, pride, surprise, and anger — they appear to be more activated as well, although the difference was only marginal for the activation scale alone. Contrary to predictions, tweets tend to be more *negative* than day-to-day emotional experience, although they are more activated and less deactivated, in line with predictions. Like Facebook posts, tweets express higher levels of a variety of activated emotions, including more amusement, awe, enthusiasm, pride, surprise and anger than day-to-day emotional experience. A key exception to the finding of an arousal bias for Facebook posts and tweets, however, is anxiety, which appears to be underrepresented in posts and tweets relative to emotional life.

Looking at more specific contexts, it is notable that Facebook posts are not significantly more positive on average than the positivity of what we experience or express in our interactions with others in person. From this angle, the positivity of Facebook posts is not especially alien — it may simply be that we address audiences in posts with the positivity we address any audience, large or small, in person. In contrast, tweets seem the alien — they are more negative than interactions with others in person, and more negative than emotional life as a whole. However, *both* Facebook posts and tweets appear to be at a maximum in positivity when they contain a photo of the self, and at a minimum in positivity when they contain a link to a news article. Facebook posts and tweets are also similar in that they display a higher level of arousal and as a whole reflect the contours of day-to-day emotional life.

In the second analysis, I associate the emotional contents of status updates with the emotions of day-to-day life, investigating how well our individual emotional lives can be inferred from the emotions we express in social media. I also examine individual factors that may strengthen or weaken validity, and explore the effect of sentiment analysis on the overall validity of these inferences in practice. I find correlations between emotion items and scales for status updates and day-to-day emotional experience to be low-moderate, on average, with substantial range for individual items, using ipsatized data. In both the Facebook and Twitter samples, status updates appear to be poor predictors of anger, surprise and shame, and relatively good predictors of passiveness and loneliness. On an exploratory basis, I also find that correlations are slightly higher for positive than negative emotions, and that emotions that are overrepresented in status updates tend to have lower correlations with emotional experience. Overall, results suggest status updates and emotional experience share no more than one quarter of their variance, on average.

Although most of the individual characteristics examined in moderation analyses did not moderate the association between status updates and emotional experience in the hypothesized *direction* for the Facebook and Twitter samples (i.e. strengthening or weakening the association), a majority of examined characteristics did exhibit a statistically significant moderating effect in both samples, supporting the larger claim that individual characteristics influence the validity of status updates as a measure of emotional experience. Overall, results for the moderation analyses seem to comport with results for the emotional profiles of Facebook posts and tweets, which are more positive and more negative than day-to-day emotional experience, respectively.

As a whole, results for moderation analyses with the Facebook sample are more consistent with a situation that prescribes positivity, therefore inhibiting the expression of negative emotion, with Facebook posts performing worse as a measure of negative emotional experience for individuals higher in attention to social appropriateness, self-presentation and privacy. Other-directedness, conscientiousness and posting concerns are especially robust moderators in the Facebook sample. Results for the Twitter sample, in contrast, are more consistent with a situation that is permissive of negative emotion, therefore disinhibiting its expression, with tweets performing better as a measure of negative emotional experience for individuals who are higher in negative emotionality and who are normally more inhibited in social settings — those higher in depression, neuroticism and introversion. Results for these factors are especially robust in the Twitter sample. Looking more closely, it seems Facebook may straddle inhibition and disinhibition with regard to negative emotion to some extent. For example, though Facebook posts perform worse for individuals higher in attention to self-presentation and privacy, they perform better for individuals who are more neurotic. It is also worth noting that how often people publish status updates moderates the association between status updates and emotional experience as well. Validity is lower for people who publish status updates less frequently.

Finally, I examine the specific effect of popular sentiment analysis program Linguistic Inquiry and Word Count (LIWC) on the overall validity of status updates as a measure of day-to-day emotional experience. In general, results suggest the specific effect of LIWC is to dissipate the low-moderate association between status updates and emotional experience. While the emotional contents of status updates have low-moderate, significant associations with emotional experience on average (using ipsatized data), LIWC outputs have essentially no association with emotional experience, likely due to low correlations between LIWC outputs and the emotional contents of status updates, as rated by participants. In summary, there is reason for researchers to be cautious when using status updates to infer emotional experience and to consider how effect size estimates and other aspects of the research may be affected by the choice of status updates to measure emotional experience. Results suggest the emotions studied, the characteristics of individuals in the sample, and the choice of sentiment analysis procedure may all substantially influence validity.

In the third analysis, I investigate the emotional experience of browsing social media, comparing emotions in this context to emotions in all other contexts as well as to emotions in interactions with others in person and during other device uses. As with the emotional profile of status updates, browsing social media appears to be very similar to day-to-day emotional experience as a whole, with a high correlation between sample means for browsing and all other emotional experiences across emotion items. Correlations between sample means for browsing and the two other comparator contexts are high as well. As with day-to-day emotional life as a whole, browsing social media is characterized predominantly by pleasant, deactivated emotions.

On average, the emotional experience of browsing Facebook and Twitter appears to be slightly more negative than emotional experience as a whole. Results suggest we are more bored, lonely and sad while browsing Facebook, and more bored, lonely, disgusted, dissatisfied and depressed while browsing Twitter. Consistently across the three comparator contexts, we are also less activated and more deactivated while browsing Facebook and Twitter. The largest differences between browsing and comparator contexts tend to fall along the arousal dimension — we are less active, more bored, more sleepy, more relaxed and so on.

While I did not make predictions about overall differences for valence and arousal between browsing and the comparator contexts, I did predict that browsing social media would be characterized specifically by greater envy and greater flow experience, comprising higher enthusiasm, excitement and interest, and lower boredom. Results suggest envy is slightly elevated while we browse Facebook — marginally so, compared to all other emotional experiences, and significantly so compared to interactions with others in person. In contrast, results suggest envy *decreases* while we browse Twitter — again, marginally compared to all other emotional experiences, and significantly compared to other device uses. While the finding of envy relief for Twitter is unexpected, as with the moderation analyses, it comports with findings about the emotional profile of tweets, which lean negative and may thus promote *favorable* social comparisons. The finding of slightly elevated envy while browsing Facebook similarly comports with the emotional profile of Facebook posts, which lean positive and may thus promote *unfavorable* social comparisons.

Across items, results do not support the hypothesis of greater flow experience while browsing social media, except in the narrow case of interest for Twitter, where it is higher compared to all other emotional experiences. This finding, and robust evidence for lower arousal while browsing, casts doubt on the potency of emotional contagion. While Facebook posts and tweets exhibit relatively *high* arousal, on average, the browsing experience is characterized by relatively *low* 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, 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 exploratory finding is based on an association of (a) average differences between status updates and non-browsing emotional experience and (b) average differences between browsing and non-browsing emotional experience for the two samples.

Synthesis and resolution of conflicts in the literature

In summary, this dissertation has helped establish important descriptive facts about emotion in social media, including facts about the emotional profile of the status update, the association between status updates and emotional life, and the emotional experience of browsing social media. What about my claim of helping to resolve conflicts in the literature?

Inference versus self-presentation

An important conflict in the literature follows from research that, on the one hand, seeks to use the emotions we express in status updates to make inferences about our emotional lives and that, on the other hand, draws attention to issues of self-presentation, privacy and emotional expression in social media, suggesting that we downplay or regulate negative emotions and present ourselves in an idealized, overly-positive fashion. In general, findings suggest both lines of research have merit, but both are also subject to limitations.

While status updates do seem to have validity as a measure of emotional experience, the correlation is low-moderate on average, is lower for people who are more concerned with self-presentation and privacy in the Facebook sample, and may be dissipated completely depending on the sentiment analysis procedure used to infer the emotion in status updates. Along these lines, while self-presentation and privacy concerns do affect validity for Facebook posts, they do not reduce correlations to zero for either the Facebook or the Twitter sample. In addition, while we are more positive in our Facebook posts than in day-to-day emotional life, we are not more positive in posts than we are in social settings in person. Further, we are more *negative* in tweets than emotional life. Overall, results suggest that self-presentation and privacy concerns influence, but do not dominate, emotional expression in social media, while the validity of sentiment analysis and status updates should not be lazily assumed.

Negative effects versus emotional contagion

Another important conflict centers 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 lines of research suggesting, for example, that we feel bad when we browse social media because we perceive it as a meaningless activity. In general, none of these perspectives seems to capture the primary effect of browsing social media, which is deactivation. In this way, browsing social media seems to be less “social” and more “media.” While we tend to be more activated in social interactions, research suggests we often use media to facilitate recovery, detachment from work and unwinding — in other words, to deactivate (Reinecke & Hofmann, 2016).

Though promoting deactivation appears to be the primary effect of browsing social media, I do find support for the envy hypothesis and for other research suggesting a negative emotional effect. Envy appears to be slightly elevated while we browse Facebook, and slightly lessened while we browse Twitter, which I propose may be explained by the gap in positivity between the status updates we *view* while browsing and how we *feel* while browsing or in life generally. It seems our day-to-day emotional lives may compare unfavorably with the relative positivity of Facebook posts, but favorably with the relative negativity of tweets.

Though Facebook and Twitter may differ with respect to envy, they appear to share some negative effects in common. Browsing the two services is associated with elevation of loneliness and either sadness or depression. Perhaps we experience a kind of wallflower effect when we view the sociality of others in social media. Seeing others socialize, possibly while we are alone, perhaps draws attention to the aloneness and makes us feel like we are on the outside looking in. Alternatively, perhaps deactivated negativity is the result of the perceived meaninglessness of browsing, is related to a feeling of inferiority associated with social comparison on Facebook, or is a response to negative content we view while browsing, especially on Twitter.

Because tweets 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. Though 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, evidence does not suggest emotional contagion is especially potent in the Twitter browsing experience. For Facebook, evidence suggests the emotions in posts may even generally result in the *opposite* emotions in the viewer.

The results of this dissertation thus cast doubt on the incredulity of Kramer et al. in the Facebook experiment that positive posts on Facebook could "somehow" affect us negatively (2014, p. 8790). A substantial body of evidence now supports such an inversion, 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. The results of this dissertation also add to the reasons to be skeptical about the Facebook experiment itself. We see that self-presentation and privacy concerns do appear to influence the validity of Facebook posts and that LIWC may have essentially no validity as a measure of emotional experience.

Overly-positive versus overly-angry

Regarding stereotypes that status updates are overly-positive or perhaps overly-angry, I find support for both to some extent. One resolution is the finding that Facebook posts are more positive than emotional experience, while tweets are more negative. Thus, "social media" is both overly-positive and overly-negative because the stereotypes individually pertain to different services. Another resolution is that Facebook posts and tweets both overrepresent a mix of positive and negative emotions within their overall leanings. Both exhibit greater anger and disgust, and tweets also exhibit greater hostility, among other negative emotions. At the same time, both exhibit notably greater amusement and awe, as well as greater pride, excitement, enthusiasm, inspiration and interest. Though status updates may not often be a mix of positive and negative emotions at the same time, they appear to be mixed in averages, supporting a simultaneous impression of over-positivity and over-anger.

Thus, reality may continue to cause some cognitive dissonance for the observer. Were emotional contagion more of a potent force, we might draw attention to a "virtuous cycle" of awe, where awed status updates stimulate awe in the viewer, perhaps promoting a positive feedback loop with spillover effects like generosity, helping, ethical decision making, and other pro-social behaviors thought to result from awe (Piff, Dietze, Feinberg, Stancato, & Keltner, 2015). Such a virtuous cycle would help offset the would-be "vicious cycle" of anger. However, I find little evidence of emotional contagion for these specific emotions on average, or for emotional contagion in general. Further, findings regarding emotions that are overrepresented in status updates should be contextualized within the larger point that status updates, on average, are similar to emotional experience.

Inhibition versus disinhibition

A final conflict is between concepts of inhibition and disinhibition in social media. Though self-presentation, privacy and other issues related to inhibition of self-disclosure and emotional expression have been a primary focus of research in social media, attention has recently returned to disinhibition because of Gamergate and other highly visible episodes of anti-social behavior.

The results of this dissertation offer support for concepts of both inhibition and disinhibition. Both Facebook posts and tweets overrepresent pride and appear to be at a maximum in positivity when they feature a photo of the self, suggesting perhaps some idealization and inhibition of negative emotion in reference to the self. Both Facebook posts and tweets also overrepresent anger and disgust, suggesting disinhibition of negative emotion, perhaps often related to discourse around politics and public life. We also see that Facebook posts overrepresent positive emotions generally and that attention to social appropriateness, self-presentation and privacy weakens the association between Facebook posts and negative emotional experience, suggesting a social situation that is relatively more inhibiting of negative emotion. In contrast, tweets overrepresent negative emotions generally, the association between tweets and negative emotional experience is generally not influenced by self-presentation and related concerns, while traits related to negative emotionality — depression, neuroticism and introversion — *strengthen* the association despite the traits predicting lower self-disclosure in social settings generally. This suggests Twitter is relatively more disinhibiting of negative emotion. Neuroticism and perhaps depression also strengthen the association in the Facebook sample, suggesting Facebook may straddle inhibition and disinhibition to some extent.

What might explain these patterns? To speculate, some of the disinhibition manifested on both services may be related to the expressive control and lack of immediate feedback and nuanced cues that characterize the status update box. While expressive control is sometimes linked to inhibition (e.g. Turkle, 2011), it is also thought to ease self-disclosure in computer-mediated communication for the socially-anxious — the depressed, neurotic and introverted — by allowing for reflection and revision prior to transmission (Walther, 1996; McKenna & Bargh, 2000; Amichai-Hamburger et al., 2002). Thus, some disinhibition for individuals with these traits on Facebook and Twitter should not be wholly surprising. A lack of nuanced cues and immediate feedback may also contribute to disinhibition on the services[74].

[74] Results, of course, do not disconfirm the notion that expressive control can also aid in inhibition. Individuals who are more attentive to self-presentation and privacy may take advantage of the expressive control offered by the status update box to regulate their expression of negative emotion on Facebook.

A key reason for differences in inhibition and disinhibition on Facebook and Twitter may be the cluster of differences they appear to have with regard to identity and intimacy. Facebook encourages us to use our full names, connect with others we know personally and share details of our private lives, whereas Twitter is permissive of anonymity, encourages us to connect with people and entities we may find interesting and has developed a focus on public life[75]. Thus, there may simply be more at stake for our personal relationships and reputations on Facebook, leading to inhibition of negative emotion. Because there is less perceptibly at stake on Twitter, in contrast, perhaps we can be more disinhibited with regard to negative emotion. Given these dynamics, norms may subsequently develop to reinforce the patterns of behavior, as may other phenomena like the "self-enhancement envy spiral" proposed by Krasnova et al. (2015).

The overarching hypothesis and the importance of comparative research
At the end of Chapter 2, I noted that the related literature seemed to imply an overarching hypothesis about emotion in social media — that status updates are overly-positive, reflecting a concern for self-presentation, which in turn suggests there are limits on how valid status updates are for inferring our day-to-day emotional experience, and which ultimately causes us to feel some envy and perhaps other negative emotions while browsing social media. In results, this entire chain of reasoning receives support for the Facebook sample. Facebook posts are more positive than day-to-day emotional experience, self-presentation concern moderates the association between Facebook posts and negative emotional experience, therefore limiting the validity of Facebook posts as a measure of negative emotional experience, while browsing Facebook is associated with slightly elevated envy. There are limits to each link in the chain of reasoning for Facebook — posts are not more positive than in-person social interactions, self-presentation concern does not eliminate validity for Facebook posts and the elevation in envy appears to be only slight, among other limitations — but every link is nonetheless supported.

It is notable, however, that the overarching hypothesis is largely disconfirmed for Twitter. Tweets are generally not more positive than day-to-day emotional experience, self-presentation concern generally does not moderate the association between tweets and negative emotional experience, and envy is not elevated while we browse Twitter. A lesson of this dissertation, therefore, may be that comparative perspectives are important in social media research. Key social psychological dynamics that characterize one service may not generalize to another, even when they feature the same core interaction (in this case, feeds of status updates). Facebook and Twitter have illuminating similarities, including an arousal bias in status updates, disinhibiting effects for traits associated with negative emotionality, and deactivation in response to browsing, but they appear to be distinct with respect to the overarching hypothesis. This suggests comparative research will continue to be fruitful as services evolve and new ones emerge.

Limitations and future directions

Chapters 1 and 3 described some of the key strengths of this dissertation's research design, including a deliberate use of baselines, deployment of a wide range of emotion measures, use of data with a high degree of ecological validity and the recruitment of diverse samples of

[75] For more on the people and other entities the two services encourage users to connect with, visit https://www.facebook.com/help/501283333222485 and https://support.twitter.com/articles/20169941.

participants. Chapter 3 also details some of the possible limitations of the research design, including two that are worth discussing here in further detail.

As noted in Chapter 3, habituation with regard to emotion items in the experience sampling and status update forms remains a possible source of bias in the results we observe, perhaps reducing the size of differences between status updates and emotional experience, inflating correlations between status updates and emotional experience, and reducing the size of differences between browsing and comparator experiences. If participants become habituated to responding to emotion items in a certain way, it may be more difficult to detect differences between the contexts of interest. Although I make an effort to mitigate the possible inflationary effect of *general* response tendencies on correlations (where the participant tends to center his or her responses and how much of the response scale he or she tends to use) by ipsatizing responses, I do not take steps, like randomizing the order of items each time they are presented, that might mitigate habituation, due to a software limitation with Paco, the experience sampling app I employ (see Chapter 3). Future research might endeavor to randomize items at each presentation or consider third-party ratings of the emotional contents of status updates, though third-party raters obviously do not have access to what people intended to express.

A second limitation discussed in Chapter 3 that is worth noting once more is the use of retrospective reports for status updates. In analyses, I use status updates that are no more than one week old, except in narrow cases where noted, and guide participants to refer to their status updates individually as they rate them, providing a memory aid. However, while taking these steps increases the chance that data corresponds to participants' *episodic memory* of the status updates instead of their *situation-specific beliefs* about status updates, they are less likely to have access to full *experiential knowledge* of what, precisely, they had intended to express in the moment (see Robinson & Clore, 2002). While I do not know what effect this may have on results, future research should experiment with methods more likely to capture experiential knowledge. For example, participants could be instructed to provide a "self-report" with the status update form each time they publish a status update, or perhaps a system could be constructed to automatically prompt them.

One limitation that was not discussed in Chapter 3 is the possibility of social desirability in participants' emotion ratings, despite the study's confidentiality. Participants may, for example, internalize social proscriptions against hostility or envy and be reluctant to report the emotions even in private, which research suggests may be a particular risk for envy (Smith & Kim, 2007, pp. 54-55). Therefore, the disinhibited hostility of status updates or the envy of browsing, for example, may be underreported and effect size estimates smaller than reality. Another particular risk for envy is underreporting related to mislabeling of the emotion as jealousy. As noted in Chapter 3, while evidence suggests people do not often mislabel jealousy as envy, they do often seem to mislabel envy as jealousy (Smith & Kim, 2007, pp. 47-48). Thus, using the item "envious" is likely to avoid erroneously capturing jealousy, but may fail to capture the envy people misclassify as jealousy, resulting in effect size estimates for envy that are smaller than reality. Future research might explore instructing participants with respect to the common confusion, or experimenting with items that may be clearer, such as feeling "inferior."

Three further potential limitations are worth discussing in relation to the emotional experience of browsing social media. First, as noted in Chapter 4, a working assumption of the emotional contagion analysis is that the emotions participants express in status updates *generalize* to the status updates they view while browsing. Unfortunately, little is known publicly about the possible emotional differences between the status updates people broadcast and the status updates they view while browsing. With respect to Facebook, posts that receive more Likes and comments are more likely to be promoted in News Feed (Backstrom, 2013) and research on emotion annotations in posts suggests posts with positive annotations receive more Likes, particularly when they relate to self-worth (e.g. feeling "accomplished" or "proud," see Burke & Develin, 2016). This suggests that the positive posts that are promoted in News Feed may be especially likely to induce unfavorable social comparison in the viewer. However, posts with negative annotations receive more comments (Burke & Develin, 2016), suggesting they may also receive promotion, and overall it is unclear what effect the algorithmic curation of News Feed may have on the emotions people view while browsing.

Twitter has also introduced algorithmic curation (see Chapter 1), and people are likely to see public figures, organizations and other entities in their feeds that may differ in emotionality but that are excluded from or underrepresented in the sample of participants recruited for this study. If the emotions participants express in status updates systematically *differ* from the status updates they view while browsing, results of the emotional contagion analysis in Chapter 4 may be less reliable. Future research might compare the emotions people express in status updates to the emotions they view while browsing to understand the influence of algorithmic curation and the presence of public figures and other entities on the emotions people view while browsing. Comparing the emotions people view to the emotions they experience while browsing would further add to our understanding of the emotional dynamics of browsing social media.

A second 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, events and videos. 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 final limitation with regard to the browsing experience relates to the nature of the emotional effects of browsing social media. 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 seems to be the most likely cause of the envy we observe. In contrast, it seems more likely that loneliness precedes browsing of Facebook and Twitter although, if this is the case, it is still interesting to note that browsing does not *alleviate* loneliness[76]. The idea that browsing social media may cause a feeling of loneliness remains an intriguing possibility, while the idea that something else situationally associated with browsing causes loneliness seems more remote.

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 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.

Another direction for future research that follows from results is to compare the emotions we express in Facebook posts to the emotions we express in social interactions in person, across the range of emotions. Results suggest Facebook posts are similar in valence to the feeling we convey in in-person social interactions on average, but I assess the feeling we convey in these interactions with only the bipolar positive-negative item. Because of the similarity in valence, results suggest the most relevant comparator for Facebook posts might not be emotional experience *generally* but rather emotional expression in in-person social interactions. Such a comparison might further illuminate the range of issues addressed in this dissertation, including inhibition, disinhibition and social comparison. A finding that Facebook posts contain more anger than the emotions we convey in social settings in person, for example, might inform the issue of disinhibition, while a finding that posts contain more pride might help explain why we

[76] Previous research with college-age participants suggests envy and loneliness do not, in fact, generally precede browsing of social media (Verduyn et al., 2015).

see greater envy in the emotional experience of browsing Facebook than we do in the emotional experience of interacting with others in person (see Table 18).

A final limitation of this dissertation 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 expression and experience on the two services. In fact, both have introduced changes since data collection for this dissertation ended[77]. Change, however, also presents new opportunities for research.

Three provocations

The calm of social media

A provocative but probably reliable implication of this dissertation is that social media, on average, is not whipping people into a frenzy, despite the common stereotype. There is some truth to the stereotype, and indeed I find status updates are characterized by higher arousal, including higher anger. But overrepresentation of anger in status updates is counterbalanced by overrepresentation of awe and, as a whole, status updates are a reflection rather than a disfiguration of the emotions of day-to-day life. In fact, the calm of daily life is reflected as one of the predominant emotions of status updates on an absolute basis. More importantly, I find clear evidence that the emotional experience of browsing social media is characterized by a *lessening* of arousal, by *winding down* rather than winding up. Contrary to popular notions of emotional contagion and media portrayals of social media as a "dumpster fire" (Townsend, 2016), in fact, social media appears to be predominantly calm and predominantly *calming*.

Envy and socioeconomic change

The deactivating effect of social media does not imply social media has little influence on daily life or on the broader socioeconomic and political picture, however. To the contrary, one of the themes that emerged from participants in the focus groups in Fox and Moreland (2014) was a sense that Facebook was changing their *offline* socializing because of the need to "get a good picture" and show friends that they, too, live fun lives (p. 172). More recently, *The Atlantic* attributes a spate of retail bankruptcies in part to shifts in consumer spending from clothing and retail toward "experiences that will make the best social media content," with a boom in the travel, hotel and restaurant industries (Thompson, 2007). Though it is likely inaccurate to view these shifts in behavior through a primarily negative lens, it is possible to see an element of the "self-enhancement envy spiral" in them (see Chapter 2 and Krasnova et al., 2015).

In addition to self-enhancement, envy is also thought to be a source of resentful and hostile behavior because of the way unfavorable social comparisons undermine our desire to maintain a positive self-image. Envy is implicated in intergroup conflicts and is thought to be behind longstanding calls for egalitarian values (Smith & Kim, 2007). In the United States, the advancements of minorities and a shrinking of the middle class have coincided in recent years with a rise in ethnocentricity and resentment of elites (e.g. "The American Middle," 2015; Taub,

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[77] See https://newsroom.fb.com/news/2016/10/introducing-marketplace-buy-and-sell-with-your-local-community and https://newsroom.fb.com/news/2017/03/more-ways-to-share-with-the-facebook-camera, for example. See also https://blog.twitter.com/2017/our-latest-update-on-safety.

2016; Lawler, 2017). Given these socioeconomic and political shifts and their possible association with envy, it may benefit society to design social media to *deemphasize* rather than emphasize the display of relative advantage and to alleviate rather than exacerbate envy. Users of social media, too, might be more thoughtful about how their status updates may spread envy.

What does social media measure?
Finally, although I find reason to be cautious about the use of status updates to infer well-being and other phenomena, I do not argue for the wholesale abandonment of these efforts. Indeed, social media offers a window into the human experience, and future research should endeavor to further our understanding of what we are looking at, and to improve how we measure it. With regard to public opinion, for example, future research might follow up on the work of Mitchell and Hitlin (2013) to investigate *who* is participating in *what proportion* and *when*, and what this implies about the issue at hand. We might inquire about the moments that elicit *negative* statements from supporters about a politician, or *positive* statements from opponents, examine where members of different political parties seem to agree, and explore the relationship between status updates and within-person changes in opinion over time.

Conclusion

This dissertation has addressed some of the fundamental questions about emotion in social media, questions about how we express ourselves, about what can be inferred about our emotional lives based on how we express ourselves, and about the impact of receiving the expressions of others on our own emotions while we browse social media in the course of daily life. Results imply resolutions for significant conflicts in the literature and help establish important descriptive facts about emotion in social media that have been sorely underdeveloped.

Across a broad spectrum of emotions, I find status updates to be similar in emotional profile to emotional life as a whole, though Facebook posts tend to be more positive on average, tweets tend to be more negative, and both tend to exhibit higher arousal than emotional life generally. I find that the emotions we express in status updates have low-moderate validity as a measure of our day-to-day emotional experience, that validity is lower for Facebook users with greater self-presentation and privacy concern, and that validity dissipates when a popular sentiment analysis program known as Linguistic Inquiry and Word Count (LIWC) is used to assess the emotional contents of status updates in practice. Finally, I find that the emotional experience of browsing social media is characterized primarily by deactivation, with a tilt toward negative emotion.

Emotion is central to debates about social media because it is central to human relations and public discourse, which social media increasingly influences. This dissertation is presented in the hope that evidence can continue to inform and ground the discussion.

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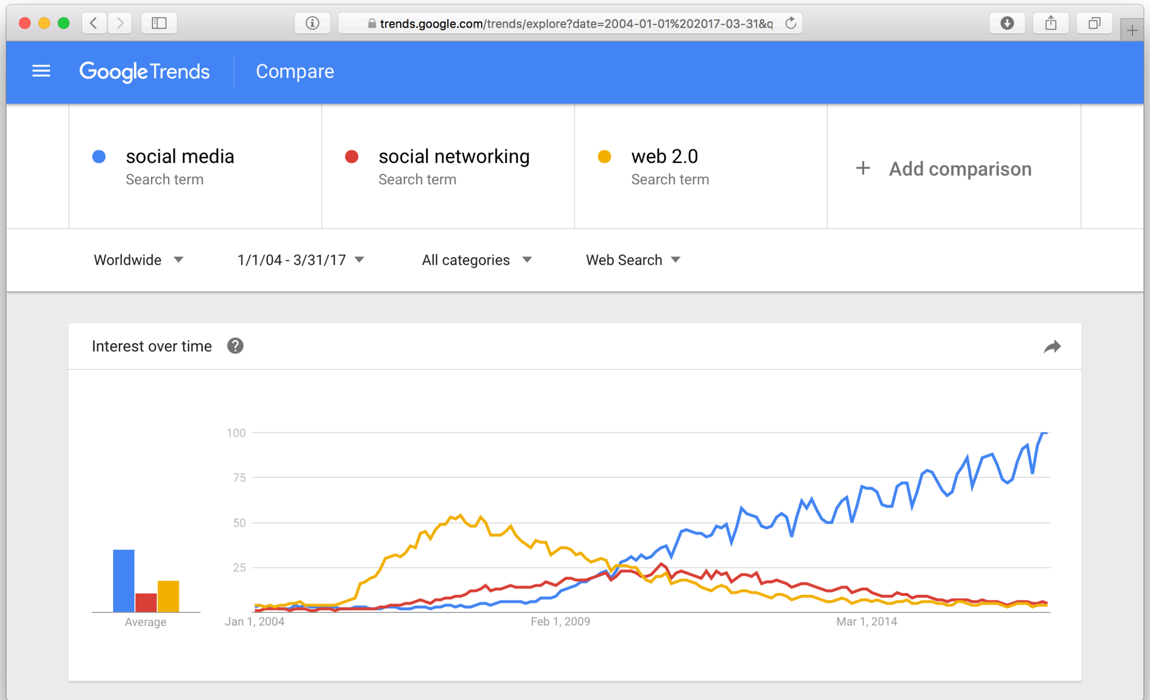
Appendix 1: Search interest in "social media" compared to other terms



This figure shows Google search interest in the term "social media" compared to "social networking" and "Web 2.0" over the period January 1, 2004 to March 31, 2017. Source: https://trends.google.com/trends.

Appendix 2: Happiest and saddest dates according to hedonometer.org

Happiest

	Date	Value
1	12/25/08	6.36
2	12/25/09	6.34
3	12/25/14	6.30
4	12/25/10	6.29
5	12/25/15	6.28
6	12/25/16	6.26
7	12/24/10	6.26
8	12/25/13	6.25
9	12/25/11	6.25
10	12/24/09	6.24
11	12/24/08	6.24
12	12/24/15	6.23
13	11/26/09	6.21
14	12/25/12	6.21
15	12/24/14	6.20
16	12/31/10	6.19
17	11/26/15	6.19
18	1/1/09	6.18
19	2/14/10	6.18
20	4/12/09	6.18

Saddest

	Date	Value
1	6/12/16	5.84
2	7/8/16	5.87
3	11/9/16	5.87
4	4/15/13	5.88
5	12/14/12	5.88
6	7/7/16	5.90
7	7/13/13	5.91
8	4/19/13	5.92
9	7/14/13	5.92
10	6/25/09	5.92
11	1/30/17	5.92
12	10/29/12	5.92
13	10/16/12	5.93
14	11/6/12	5.93
15	1/22/13	5.93
16	5/22/13	5.93
17	4/23/12	5.93
18	1/6/13	5.93
19	1/29/17	5.93
20	5/2/11	5.93

Source: http://hedonometer.org/data/word-vectors/vacc/sumhapps.csv. Retrieved March 31, 2017.

Appendix 3a: Opening questionnaire

Page 1

Thank you for your interest in the study. In order to participate, you must be a [Twitter, Facebook] user who [tweets, posts] about once or twice each day from a personal account. If you rarely [tweet or only retweet others, post on Facebook], you don't qualify. You must also reside in the United States, speak English and be 18 years or older.

Part of this study also requires that you have an iPhone or Android phone that you carry with you throughout the day. The phone should have a data plan or connect regularly to WiFi. In addition, you'll need a Gmail address (or an email you use to log into Google services) to use with the research app. If you don't have a Gmail address, you can sign up here.

If you meet these requirements, please continue to the next page. This page contains an official consent form detailing important information about the study and your rights as a participant. Please read this carefully and provide your contact information if you agree to participate.

Page 2 — Consent form (not shown) and state of residence

In what state do you currently reside?

Drowpdown menu

Page 3

What is your **first name**?

What is your **last name**?

What **email address** should we use to contact you during the study? Please enter the best email address to use to contact you during the study for follow-up and payment purposes.

What is your **Gmail address** or the email you use with Google services? Please enter the personal email address you typically use to log into Google services. For most people, this is a Gmail address. If the address is the same as the one you entered above, please re-enter it here. This is the email address you will use to log into the research app, Paco.

Text entry

Page 4

Thank you for joining the study. Before we get started, please take a moment to write down the contact information you entered and today's date and time, which will be helpful to refer to later. You can also take a screenshot or a photo of this information if you prefer. If you notice any typos, please use the "Previous" button to go back and correct them.

Your contact email: [Displayed]

Your Google email (for logging into Paco): [Displayed]

Today's date and time: [Displayed]

You may also wish to write down the study website, where you can go if you have questions at any time.

Study website: [twitterstudy.berkeley.edu, facebookstudy.berkeley.edu]

Page 5

You will now begin the opening questionnaire. If you are unable to complete this questionnaire in one sitting, it's okay to take a break. Please leave this window open if you take a break. If you accidentally close this window, you may return by going back to [twitterstudy.berkeley.edu, facebookstudy.berkeley.edu], clicking on “Information for Current Participants,” and then “Opening Questionnaire.”

Though some questions are of a sensitive nature, please answer them as honestly and accurately as you can. The information you provide is confidential and will be treated with care to maintain your privacy. Please click the button below to begin.

Page 6 — Satisfaction With Life (5 items, Diener et al., 1985)

Below are five statements with which you may agree or disagree. Indicate your agreement or disagreement with each statement by selecting the appropriate response.

- In most ways my life is close to my ideal.
- The conditions of my life are excellent.
- I am satisfied with my life.
- So far I have gotten the important things I want in life.
- If I could live my life over, I would change almost nothing.

Likert-type scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 7 — Depression CESD-R (20 items, Eaton et al., 2004)

Below is a list of some of the ways you might have felt or behaved. For each statement, please indicate how often you have felt this way in the past week or so by selecting the appropriate response.

- My appetite was poor.
- I could not shake off the blues.
- I had trouble keeping my mind on what I was doing.
- I felt depressed.
- My sleep was restless.

- I felt sad.
- I could not get going.
- Nothing made me happy.
- I felt like a bad person.
- I lost interest in my usual activities.

Page 8 — Instructions repeated

- I slept much more than usual.
- I felt like I was moving too slowly.
- I felt fidgety.
- I wished I were dead.
- I wanted to hurt myself.
- I was tired all the time.
- I did not like myself.
- I lost a lot of weight without trying to.
- I had a lot of trouble getting to sleep.
- I could not focus on the important things.

Scale from 1 (Not at all or less than 1 day last week) to 5 (Nearly every day for 2 weeks)

Page 9 — PANAS (20 items, Watson et al., 1988)

This page includes a number of words that describe different feelings and emotions. Read each item and then select the appropriate answer. Indicate to what extent you generally feel this way, that is, how you feel on the average.

- Interested
- Distressed
- Excited
- Upset
- Strong
- Guilty
- Scared
- Hostile
- Enthusiastic
- Proud

Page 10 — Instructions repeated

- Irritable
- Alert
- Ashamed
- Inspired
- Nervous
- Determined

- Attentive
- Jittery
- Active
- Afraid

Scale from 1 (Very slightly or not at all) to 5 (Extremely)

Page 11 — Positive and Negative Expressivity (10 items, Gross & John, 1995)

Below are statements with which you may agree or disagree. Indicate your agreement or disagreement with each statement by selecting the appropriate response.

- Whenever I feel positive emotions, people can easily see exactly what I am feeling.
- People often do not know what I am feeling.
- I laugh out loud when someone tells me a joke that I think is funny.
- It is difficult for me to hide my fear.
- When I'm happy, my feelings show.
- I've learned it is better to suppress my anger than to show it.
- No matter how nervous or upset I am, I tend to keep a calm exterior.
- I am an emotionally expressive person.
- Whenever I feel negative emotions, people can easily see exactly what I am feeling.
- What I'm feeling is written all over my face.

Scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 12 — Reappraisal and Expressive Suppression (10 items, Gross & John, 2003)

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your <u>emotional experience</u>, or what you feel like inside. The other is your <u>emotional expression</u>, or how you show your emotions in the way you talk, gesture or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please state whether you agree or disagree.

- When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about.*
- I keep my emotions to myself.
- When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
- When I am feeling *positive* emotions, I am careful not to express them.
- When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
- I control my emotions by *not expressing them*.
- When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.
- I control my emotions by *changing the way I think* about the situation I'm in.

- When I am feeling *negative* emotions, I make sure not to express them.
- When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.

Scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 13 — Big Five Inventory (44 items, John et al., 1991)

How I am in general

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please indicate the extent to which you agree or disagree with each statement below.

I am someone who...

- Is talkative
- Tends to find fault with others
- Does a thorough job
- Is depressed, blue
- Is original, comes up with new ideas
- Is reserved
- Is helpful and unselfish with others
- Can be somewhat careless
- Is relaxed, handles stress well.
- Is curious about many different things
- Is full of energy
- Starts quarrels with others
- Is a reliable worker
- Can be tense
- Is ingenious, a deep thinker
- Generates a lot of enthusiasm
- Has a forgiving nature
- Tends to be disorganized
- Worries a lot
- Has an active imagination
- Tends to be quiet
- Is generally trusting

Page 14 — Continued

I am someone who...

- Tends to be lazy
- Is emotionally stable, not easily upset
- Is inventive

- Has an assertive personality
- Can be cold and aloof
- Perseveres until the task is finished
- Can be moody
- Values artistic, aesthetic experiences
- Is sometimes shy, inhibited
- Is considerate and kind to almost everyone
- Does things efficiently
- Remains calm in tense situations
- Prefers work that is routine
- Is outgoing, sociable
- Is sometimes rude to others
- Makes plans and follows through with them
- Gets nervous easily
- Likes to reflect, play with ideas
- Has few artistic interests
- Likes to cooperate with others
- Is easily distracted
- Is sophisticated in art, music, or literature

Scale from 1 (Disagree strongly) to 5 (Agree strongly)

Page 15 — Self-Monitoring Scale (25 items, Snyder, 1974)

The statements below concern your personal reactions to a number of situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is <u>true or mostly true</u> as applied to you, choose True as your answer. If a statement is <u>false or not usually true</u> as applied to you, choose False as your answer. It is important that you answer as frankly and as honestly as you can.

- I find it hard to imitate the behavior of other people.
- My behavior is usually an expression of my true inner feelings, attitudes, and beliefs.
- At parties and social gatherings, I do not attempt to do or say things that others will like.
- I can only argue for ideas which I already believe.
- I can make impromptu speeches even on topics about which I have almost no information.
- I guess I put on a show to impress or entertain people.
- When I am uncertain how to act in a social situation, I look to the behavior of others for cues.
- I would probably make a good actor.
- I rarely need the advice of my friends to choose movies, books, or music.
- I sometimes appear to others to be experiencing deeper emotions than I actually am.
- I laugh more when I watch a comedy with others than when alone.
- In a group of people I am rarely the center of attention.

Page 16 — Instructions repeated

- In different situations and with different people, I often act like very different persons.
- I am not particularly good at making other people like me.
- Even if I am not enjoying myself, I often pretend to be having a good time.
- I'm not always the person I appear to be.
- I would not change my opinions (or the way I do things) in order to please someone else or win their favor.
- I have considered being an entertainer.
- In order to get along and be liked, I tend to be what people expect me to be rather than anything else.
- I have never been good at games like charades or improvisational acting.
- I have trouble changing my behavior to suit different people and different situations.
- At a party I let others keep the jokes and stories going.
- I feel a bit awkward in company and do not show up quite so well as I should.
- I can look anyone in the eye and tell a lie with a straight face (if for a right end).
- I may deceive people by being friendly when I really dislike them.

True, False

Page 17 — Domain Specific Envy Scale (15 items, Rentzsch & Gross, 2015)

In the following you will read a number of statements, with which you can agree or disagree to a certain extent. Indicate your agreement by selecting the appropriate response to each item.

- It bothers me when others can have every romantic partner that they want.
- It is hard to bear when other people are more intelligent than I am.
- It bothers me when others own things that I cannot have.
- It makes me feel uncomfortable when others are more attractive than I am.
- It disturbs me when others can express themselves verbally better than I can.
- It is hard for me to bear when others can buy everything they want to buy.
- It annoys me when others are more popular than I am.
- It bothers me when others are more creative than I am.
- It troubles me when others have higher tech equipment than I have.
- It disturbs me when people get along with others better than I do.
- It bothers me when others are quicker on the uptake of an issue than I am.
- It is hard for me to bear when others have more clothes in their wardrobe than I have.
- It eats me up inside when people come across to others better than I do.
- It disturbs me when others have a greater fund of knowledge than I have.
- It bothers me when others live in a better neighborhood than I do.

Scale from 1 (I don't agree at all) to 5 (I agree very much)

Page 18 — Venting and Emotional Support (Carver, 1997)

We are interested in how you cope with difficult or stressful events in your life in general. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress in your life. There are no right or wrong answers, so choose the most accurate answer for you.

- I say things to let my unpleasant feelings escape.
- I express my negative feelings.
- I get emotional support from others.
- I get comfort and understanding from someone.

Scale from 1 (I usually don't do this at all) to 4 (I usually do this a lot)

Page 19

What is your gender identity?

Male, Female, Different identity (specify)

How old are you? (Enter your age in years)

Text entry

What is your race or ethnic origin? Choose one or more of the below responses.

White, Caucasian; Hispanic, Latino; Black, African-American; Asian; Pacific Islander, Native Hawaiian; Native American, Alaska Native; Not listed (specify)

Are you currently unemployed and looking for a job? (Select 'No' if you are currently a student, a stay-at-home parent, retired or are otherwise not looking for a job.)

Yes, No

Do you have a degree from a four-year college or university?

Yes, No

What is your total annual income, before taxes?

Less than $25,000; $25,000 - $50,000; $50,000 - $75,000; $75,000 - $100,000; More than $100,000

Will you be using an iPhone or Android phone for this study?

iPhone, Android phone

Page 20

Thank you for your time and effort. **To submit your questionnaire, please click the Next button below.**

After clicking the Next button, you'll be directed to instructions for getting set up for the Experience Sampling phase of the study, which lasts one week and involves answering four short surveys sent to your phone each day during your waking hours. To get set up, you'll need to download an app named Paco to your phone and enroll in our experiment there.

It's important to do this now. It should only take about 5 minutes.

Please click the Next button to submit your questionnaire and continue to instructions for "Getting Started with Paco" on the study website. If you run into trouble, please email us at [twitterstudy@berkeley.edu, facebookstudy@berkeley.edu].

Appendix 3b: Experience sampling form

Take a moment to note what was happening, where you were and what you were feeling as you were signaled. Now, hold that feeling in your mind as you answer the following questions. As you were signaled, were you feeling generally positive or negative?

Likert-type scale from 1 (Very negative) to 7 (Very positive)

Did you feel[1] …

… upset?	… in awe?	… sad?	… dissatisfied?
… proud?	… depressed?	… interested?	… excited?
… active?	… inspired?	… passive?	… tired?
… nervous?	… envious?	… peaceful?	… happy?
… loving?	… at ease?	… lonely?	… disgusted?
… angry?	… sick?	… calm?	… afraid?
… sleepy?	… surprised?	… unhappy?	… enthusiastic?
… stirred up?	… relaxed?	… anxious?	… ashamed?
… bored?	… hostile?	… amused?	… satisfied?

Scale from 1 (Not at all) to 5 (Extremely)

As you were signaled, what were you doing? (1-3 words, such as eating, working, jogging)

Text entry

Where were you? (1-3 words, such as home, work, a cafe)

Text entry

Were you speaking or interacting with anyone in person?

No; Yes, with 1 person; Yes, with 2-4 people; Yes, with 5-9 people; Yes, with 10 or more people

If yes, were you conveying a generally positive or negative feeling to them?

Not applicable; Scale from 1 (Very negative) to 7 (Very positive)

As you were signaled, were you actively using a computer, smartphone or tablet?

No; Yes, and I was browsing Facebook; Yes, and I was talking to someone on Facebook; Yes, and I was browsing Twitter; Yes, and I was talking to someone on Twitter; Yes, and I was doing something else (such as writing email, Netflix)

If you said "something else," what were you doing on your device? (Optional, 1-3 words)

Text entry

[1] Items are presented in a single column.

Appendix 3c: Closing questionnaire

Page 1

You are about to begin the closing questionnaire. If possible, we recommend that you complete this questionnaire on your desktop or laptop computer because it's easier to switch between this survey and your [Twitter, Facebook] account for tasks you'll complete here.

If you are unable to complete this questionnaire in one sitting and need to take a break, it is okay to do so. Please leave this window open while you take a break. If you accidentally close this window, you may return to the questionnaire by referring to the link in your email. You may also contact us at [twitterstudy@berkeley.edu, facebookstudy@berkeley.edu] if you need assistance.

Though some questions in this questionnaire are of a sensitive nature, please answer them as honestly and accurately as you can. As always, the information you provide is confidential and will be treated with care to maintain your privacy.

Thank you for your time and effort. Please **confirm your contact information** one more time and then click the button below to continue.

What is your **first name**?

What is your **last name**?

What is your **contact email address** for this study?

What is your **Google email address**, which you used to log into the Paco app?

Text entry

Page 2 — Satisfaction With Life (5 items, Diener et al., 1985)

Below are five statements with which you may agree or disagree. Indicate your agreement or disagreement with each statement by selecting the appropriate response.

- In most ways my life is close to my ideal.
- The conditions of my life are excellent.
- I am satisfied with my life.
- So far I have gotten the important things I want in life.
- If I could live my life over, I would change almost nothing.

Likert-type scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 3 — Depression CESD-R (20 items, Eaton et al., 2004)

Below is a list of some of the ways you might have felt or behaved. For each statement, please indicate how often you have felt this way in the past week or so by selecting the appropriate response.

- My appetite was poor.
- I could not shake off the blues.
- I had trouble keeping my mind on what I was doing.
- I felt depressed.
- My sleep was restless.
- I felt sad.
- I could not get going.
- Nothing made me happy.
- I felt like a bad person.
- I lost interest in my usual activities.

Page 4 — Instructions repeated

- I slept much more than usual.
- I felt like I was moving too slowly.
- I felt fidgety.
- I wished I were dead.
- I wanted to hurt myself.
- I was tired all the time.
- I did not like myself.
- I lost a lot of weight without trying to.
- I had a lot of trouble getting to sleep.
- I could not focus on the important things.

Scale from 1 (Not at all or less than 1 day last week) to 5 (Nearly every day for 2 weeks)

Pages 5-11 — Instructions for status update form (see Appendices 3e and 3f)

Page 12 — Status update form, looped 10 times (see Appendix 3d)

Page 13 — Displayed if participant published more than 10 status updates during the week

Earlier, you indicated that you [tweeted, posted on Facebook] more than ten times since you joined this study. Would you be willing to rate another five [tweets, posts] (your eleventh through fifteenth most recent)? This is optional, but is very helpful to the study if you have the time.

Rate five more, Skip

Page 14 — Status update form (see Appendix 3d) looped 5 more times if participant opted to

Page 15

Thank you for your time and effort on the previous tasks. The following pages include some additional multiple choice questions and then the questionnaire concludes with open-ended questions asking for your reflections.

Please click the button below to continue.

Page 16 — Status update motivations (16 items, loosely adapted from Quinn, 2016)

We're interested in your reasons for [tweeting, posting on Facebook], with respect to all of the [tweets, posts] you just rated in the last section. Please read through the following reasons people give for [tweeting, posting], indicating <u>how much each reason was like your own reasons</u> by marking the appropriate response.

I [tweeted, posted on Facebook] to...

- Share my successes and accomplishments.
- Show others the real me.
- Raise awareness about an issue or a cause.
- Share information that might be of use or interest to others.
- Let my unpleasant feelings escape.
- Get emotional support from others.
- Maintain relationships with others.
- Show others how great my life is.
- Express my emotions.
- Get attention.
- Promote myself professionally.
- Feel less lonely.
- Talk about a business, product or service (not my own).
- Talk about a live event while it was happening.
- Pass the time when I had nothing better to do.
- Get a rise out of other people.

Scale from 1 (Not at all) to 5 (Exactly)

Page 17 — Context collapse assessment

On [Twitter, Facebook], it is common [for, to connect with] friends, relatives, acquaintances and others you may know from different stages and different parts of your life [to follow you., .] For example, you might be [followed by, connected with] people you know from high school or college, from a current or previous job, from places you've lived, or from church or other activities you've been or are currently a part of.

Please use the text boxes below to list as many of these groups that seem distinct to you as you can. For example, if you are [followed by, connected to] friends from a reading group you belong to, write 'Friends from my reading group'.

10 text entry fields

Page 18 — Context collapse assessment continued

Are there any other groups you can think of?

5 text entry fields

Page 19 — Perceptions of audience

Now, think about all of the groups of people [who follow you on Twitter, you connect with on Facebook] as a whole. On the whole, would you say…

- They are trustworthy.
- They are empathetic.
- They are altruistic.
- They are unattractive.
- You like them.
- They are judgmental.
- They are higher in social status than you.
- They are unfamiliar to you; you don't know most of them well.
- You can speak and behave the same way around all of them without issue.
- They know one another very well; they are tightly-knit as a whole.
- You feel closely connected to them.
- They are more feminine than masculine.
- They are supportive.
- Something you might say to one group might not be appropriate to say to another group.
- You would express yourself more openly if one group [did not follow you on Twitter, was not connected to you on Facebook].

Scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 20 — Concern for Information Privacy Instrument (8 items, Smith et al., 1996)

Here are some statements about personal information. From the standpoint of personal privacy, please indicate the extent to which you, as an individual, **agree** or **disagree** with each statement by selecting the appropriate response.

- Companies should devote more time and effort to preventing unauthorized access to personal information.
- When companies ask me for personal information, I sometimes think twice before providing it.

- Companies should take more steps to make sure that the personal information in their files is accurate.
- Companies should have better procedures to correct errors in personal information.
- It bothers me to give personal information to so many companies.
- Companies should never sell the personal information in their computer databases to other companies.
- Companies should never share personal information with other companies unless it has been authorized by the individuals who provided the information.
- Companies should take more steps to make sure that unauthorized people cannot access personal information in their computers.

Scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 21 — Posting Concerns (3 items, adapted from Vitak, 2012)

Please rate the extent to which you agree or disagree with the following statements.

- I am careful in what I [tweet, post to Facebook] because I worry about people I don't know seeing it.
- Concerns about the privacy of content posted to [Twitter, Facebook] keep me from [tweeting, posting] as frequently as I would like.
- Concerns about the privacy of content posted to [Twitter, Facebook] keep me from [tweeting, posting] personal information.

Scale from 1 (Strongly disagree) to 7 (Strongly agree)

Page 22 — Content Impression Management (3 items, adapted from Vitak, 2015)

How often do you engage in each of the following behaviors when using [Twitter, Facebook]?

- Spend time thinking about who can see something you're [tweeting, posting].
- Delete a [tweet, Facebook post] before publishing, or shortly after.
- Change the wording of a [tweet, Facebook post] to avoid upsetting some of your [followers, friends].

Scale from 1 (Never) to 5 (Very often)

Page 23 — Marlowe-Crowne Social Desirability Scale (33 items, Crowne & Marlowe, 1960)

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

- Before voting I thoroughly investigate the qualifications of all the candidates.
- I never hesitate to go out of my way to help someone in trouble.
- It is sometimes hard for me to go on with my work if I am not encouraged.
- I have never intensely disliked anyone.
- On occasion I have had doubts about my ability to succeed in life.

- I sometimes feel resentful when I don't get my way.
- I am always careful about my manner of dress.
- My table manners at home are as good as when I eat out in a restaurant.
- If I could get into a movie without paying and be sure I was not seen I would probably do it.
- On a few occasions, I have given up doing something because I thought too little of my ability.
- I like to gossip at times.
- There have been times when I felt like rebelling against people in authority even though I knew they were right.
- No matter who I'm talking to, I'm always a good listener.
- I can remember "playing sick" to get out of something.
- There have been occasions when I took advantage of someone.
- I'm always willing to admit it when I make a mistake.
- I always try to practice what I preach.

Page 24 — Instructions repeated

- I don't find it particularly difficult to get along with loud mouthed, obnoxious people.
- I sometimes try to get even rather than forgive and forget.
- When I don't know something I don't at all mind admitting it.
- I am always courteous, even to people who are disagreeable.
- At times I have really insisted on having things my own way.
- There have been occasions when I felt like smashing things.
- I would never think of letting someone else be punished for my wrongdoings.
- I never resent being asked to return a favor.
- I have never been irked when people expressed ideas very different from my own.
- I never make a long trip without checking the safety of my car.
- There have been times when I was quite jealous of the good fortune of others.
- I have almost never felt the urge to tell someone off.
- I am sometimes irritated by people who ask favors of me.
- I have never felt that I was punished without cause.
- I sometimes think when people have a misfortune they only got what they deserved.
- I have never deliberately said something that hurt someone's feelings.

True, False

Page 25

How would you describe your overall health in recent weeks?

Very poor, Poor, Fair, Good, Very good

We'd like to know whether you have a physical, mental or emotional condition that causes serious difficulty with your daily activities. Please answer yes or no to the following questions[1].

- Are you deaf or do you have serious difficulty hearing?
- Are you blind or do you have serious difficulty seeing even when wearing glasses?
- Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?
- Do you have serious difficulty walking or climbing stairs?
- Do you have difficulty dressing or bathing?
- Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?

Yes, No

Do you experience chronic pain? Chronic pain is defined as pain that has been ongoing or that has occurred frequently for more than 3 months, such as regular headaches, backaches, joint pain, carpal tunnel, or pain from an injury[2].

Scale from 1 (No chronic pain) to 4 (Severe chronic pain)

Page 26

In general, would you say you are more aligned with Republicans or Democrats?

Republicans, Democrats, Completely unaligned

Is English your native language (the language you speak most fluently)?

Yes, No

How often would you say you use slang or intentionally use non-traditional grammar and spellings when you [tweet, post on Facebook]?

Scale from 1 (Never or almost never) to 7 (Always or almost always)

Do you identify yourself by your full first and last name on your [Twitter, Facebook] profile [Twitter only: or in your username]?

I show my full first and last name, I show part of my name only, I do not show my name (or I show a pseudonym)

Is your [Twitter, Facebook] profile picture a photo of you, or are you not in the picture?

I'm in my profile photo, I'm not in my profile photo

---

[1] Items adapted from the U.S. Census American Community Survey (Brault, 2009).

[2] Item uses the 3-month standard from the International Association for the Study of Pain (Harstall & Ospina, 2003).

[Twitter only: Are your tweets protected or are they public?]

Protected, Public

[Facebook only: In general, are your privacy settings such that your posts are visible to the public, to friends only, or do you use some other setting?]

My posts are visible to the public, My posts are visible to friends only, I use another privacy setting (specify)

Page 27 — Instructions for profile items (see Appendices 3e and 3f)

Page 28

We'd like to hear from you. If any thoughts or reflections occurred to you during the study that you'd like to share with us, please take a moment to do so here. You may write as much or as little as you like. Please write in complete sentences if you can.

If you have any feedback on the study itself, or if you experienced any problems or issues during the study that we should know about, please describe below.

Do you think being a part of this study changed what you did this week, how you thought or felt, or what you said on [Twitter, Facebook]? If so, please explain.

Did any major events occur (for example, in your life, or in the news) during the study period that affected you? Please describe the event(s), if any, and what effect they had on you. Did you [tweet, post] about them on [Twitter, Facebook]?

Text entry

Page 29

How do you decide what to [tweet, post] on [Twitter, Facebook]? What sorts of things, if any, factor into your decision making? Do you feel like you can be open about your life on [Twitter, Facebook]? Please explain in one or more sentences.

Do you think your decision-making about what to say or express on [Twitter, Facebook] has changed over time? If so, in what way?

What would you say are the most appropriate things to [tweet, post] about on [Twitter, Facebook]? Least appropriate? Do you consider any emotions to be more appropriate than others?

Among [the people you follow on Twitter, your Facebook friends], whose [tweets, posts] do you most appreciate or enjoy? Least appreciate or enjoy? Explain.

Text entry

Page 30

If someone were trying to determine how you feel or how happy you are in life based on what you [tweet, post on Facebook], how successful do you think they would be?

Scale from 1 (Very unsuccessful) to 7 (Very successful)

Please explain your reasoning.

When you are composing a [tweet, Facebook post], do you ever think about privacy? Privacy from whom? What, if anything, most concerns you with respect to privacy? Do you take any steps to protect your privacy when composing a [tweet, Facebook post]?

Text entry

Page 31

You have completed the closing questionnaire and are now done with the study. Please submit your questionnaire by clicking the Next button below. Thank you for all of your time and effort, and for contributing to academic research at Berkeley.

Please write down this six-digit code: XXXXXX

You'll use this code to log into the payments system. Within three days, you will receive an email from the Berkeley Virtual Payments service with instructions for logging into our payment system to receive your compensation. Please use this code to log in. If you lose the code, send us an email at [twitterstudy@berkeley.edu, facebookstudy@berkeley.edu] and we will retrieve it for you.

If you are the winner of the $500 Apple Gift Card, we will send you an email and do our best to get in touch with you. To check on the status of the drawing for the gift card, visit [twitterstudy.berkeley.edu/help.html, facebookstudy.berkeley.edu/help.html]. We expect to announce the winner in August.

Please click the Next button to submit your questionnaire and continue to instructions on how to stop notifications from Paco. It's very important to submit your answers by clicking the Next button below.

Thank you!

Appendix 3d: Status update form

Paste the text of your [first, …, tenth][1] [tweet, Facebook post]. Remember not to include [Retweets or "@" Reply tweets, posts you didn’t author]. If you didn't write any text for this [tweet, post], please skip it and paste the next [tweet, post] here instead (this will be treated as your [first, …, tenth] [tweet, post]).

What **date** did you publish this [tweet, post]? **MM/DD/YYYY**

What **time** did you publish this [tweet, post]? **HH:MM AM/PM**

Text entry

Take a moment and try to recall what was happening and where you were as you [tweeted, posted] this. Recall also what you were feeling in this [tweet, post]. Now, hold that feeling in your mind as you answer the following questions.

In this [tweet, post], were you feeling generally positive or negative?

Likert-type scale from 1 (Very negative) to 7 (Very positive)

Did you feel[2] …

… upset?	… in awe?	… sad?	… dissatisfied?
… proud?	… depressed?	… interested?	… excited?
… active?	… inspired?	… passive?	… tired?
… nervous?	… envious?	… peaceful?	… happy?
… loving?	… at ease?	… lonely?	… disgusted?
… angry?	… sick?	… calm?	… afraid?
… sleepy?	… surprised?	… unhappy?	… enthusiastic?
… stirred up?	… relaxed?	… anxious?	… ashamed?
… bored?	… hostile?	… amused?	… satisfied?

Scale from 1 (Not at all) to 5 (Extremely)

Did you include a **photo** in this [tweet, post]?

No; Yes, and I am in the photo; Yes, but I am not in the photo

Did you include a **video** in this [tweet, post]?

No; Yes, and I am in the video; Yes, but I am not in the video

Did you include a **URL or link** to something in this [tweet, post]?

No; Yes, a link to a news article; Yes, a link to something else (specify in 1-3 words, such as lyrics, a recipe)

---

[1] Participants can opt to include their eleventh through fifteenth status updates as well, if they have published more than 10 status updates during the study week.
[2] Items are presented in a single column.

Page 5

We would like to customize instructions for tasks in the next section based on the device you're using right now to complete this questionnaire. What type of device are you using?

Desktop or laptop computer, iPhone (or iPad), Android phone (or Android tablet)

Page 6

For the next part of this questionnaire, we'd like you to log on to your personal Twitter account. A personal account is one that you use to tweet on your own behalf, rather than on behalf of someone else or an organization.

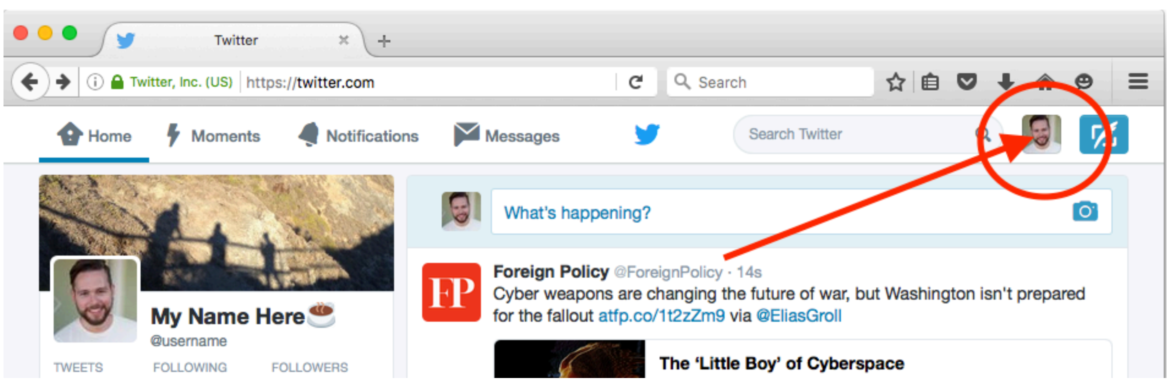
If you have more than one personal account on Twitter, please log into the account you tweet from most often.

It is **extremely important** that you log in now and provide accurate information in this section.

Page 7 — Desktop

Once you have logged in, **navigate to your profile** where your most recent tweets are displayed.

To view your profile, log onto Twitter, then **click on your profile photo** in the upper right-hand corner and select "View profile." This will take you to your profile where your most recent tweets are displayed.



Page 7 — iOS

Once you have logged in, **navigate to your profile** where your most recent tweets are displayed.

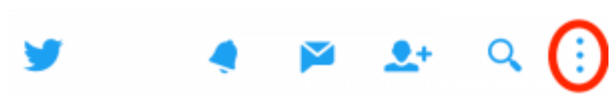
To view your profile, open the Twitter app, then tap on the "Me" button near the bottom right-hand corner of the screen. This will take you to your profile where your most recent tweets are displayed.

If you're using a mobile browser instead of the app, tap on your profile picture, which should be near the top right-hand corner of your screen. Then tap "Profile."

Page 7 — Android

Once you have logged in, **navigate to your profile** where your most recent tweets are displayed.

To view your profile, open the Twitter app, tap on the three vertical dots in the upper right-hand corner, then tap on your username. This will take you to your profile where your most recent tweets are displayed.



If you're using a mobile browser instead of the app, tap on your profile picture, which should be near the top right-hand corner of your screen.

Page 8

Please recall the date and time you joined this study, which you may have written down somewhere (your join date and time should also be included in the first email we sent you). If you don't remember the date and time you joined, count back roughly seven days from today's date.

Since the date and time you joined this study, about how many tweets have you authored? Looking through your Twitter profile, please count the number of tweets you authored during the study period and enter the number here. Don't count Retweets displaying someone else's profile photo and username, and don't count Reply tweets, which start with the "@" symbol as the first character.

Text entry

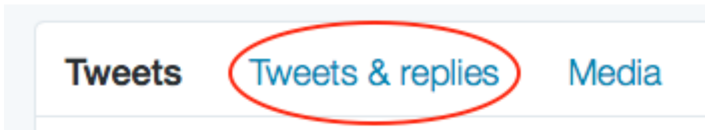
Page 9

Since you joined this study, how many tweets have you **retweeted**? These are tweets on your profile which show someone else's profile photo and username.

Text entry

Page 10 — Desktop

Since you joined this study, how many **reply tweets** have you authored? These are tweets on your profile which start with the "@" symbol as the first character. These reply tweets aren't shown on your profile by default, so you have to click "Tweets & replies" (shown below) to see them.



Text entry

Page 10 — iOS and Android

Since you joined this study, how many **reply tweets** have you authored? These are tweets on your profile which start with the "@" symbol as the first character.

Text entry

Page 11 — Desktop

Next, we'll ask you to complete a set of tasks where you'll copy and paste your **ten most recent tweets** (not counting Retweets or Reply tweets) and then rate what you were feeling in each of them. Some of these tweets may be from more than seven days ago, which is fine if that's the case.

Again, we're looking for the ten most recent tweets you authored, avoiding Retweets (which show someone else's profile photo and username) and Reply tweets (which start with the "@" symbol as the first character). Copy and paste only the text of the tweet (include hashtags and anything else in the text). If you are unable to copy and paste, please type this text manually.

If you **click on the tweet** (anywhere in the tweet's white space), you'll be taken to the below detailed view, where you can take note of the exact <u>date and time</u> it was tweeted:

Page 11 — iOS

Next, we'll ask you to complete a set of tasks where you'll copy and paste your **ten most recent tweets** (not counting Retweets or Reply tweets) and then rate what you were feeling in each of them. Some of these tweets may be from more than seven days ago, which is fine if that's the case.

Again, we're looking for the ten most recent tweets you authored, avoiding Retweets (which show someone else's profile photo and username) and Reply tweets (which start with the "@" symbol as the first character). Copy and paste only the text of the tweet (include hashtags and anything else in the text).

To copy the text of the tweet, first, **tap on the tweet** (anywhere in the tweet's white space) to enter its detailed view, then tap and hold on the tweet text until you see a "Copy" button. If you are unable to copy and paste, please type this text manually.

Please note the exact <u>date and time</u>, which are also displayed in the tweet's detailed view.

Page 11 — Android

Next, we'll ask you to complete a set of tasks where you'll copy and paste your <u>**ten most recent tweets**</u> (not counting Retweets or Reply tweets) and then rate what you were feeling in each of them. <u>Some of these tweets may be from more than seven days ago</u>, which is fine if that's the case.

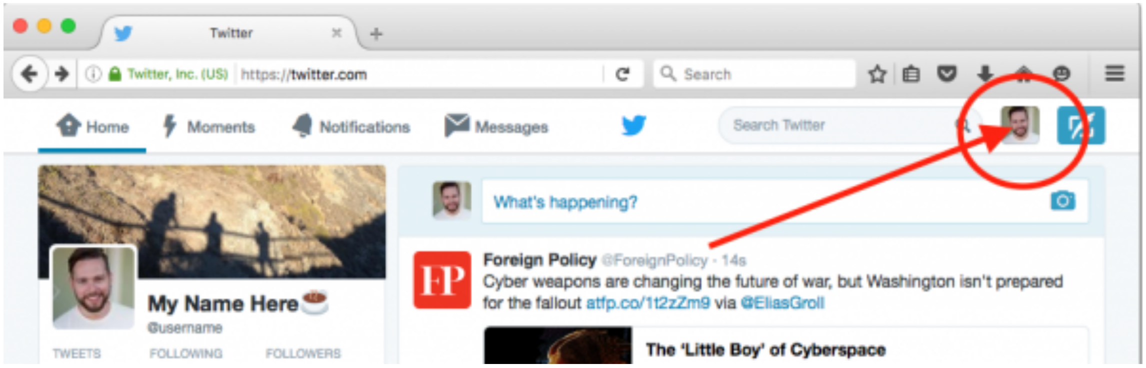
Again, we're looking for the ten most recent tweets you authored, avoiding Retweets (which show someone else's profile photo and username) and Reply tweets (which start with the "@" symbol as the first character). Copy and paste <u>only the text</u> of the tweet (include hashtags and anything else in the text).

To copy the text of the tweet, first, **tap on the tweet** (anywhere in the tweet's white space) to enter its detailed view, then <u>tap and hold</u> on the tweet text until you see the message "Copied to clipboard." If you are unable to copy and paste, please type this text manually.

Please note the exact date and time, which are also displayed in the tweet's detailed view.

Page 27 — Desktop

We'd like to gather a few stats from your profile. To locate these numbers, please log into your Twitter account and navigate to your profile. To get there, click on your profile photo near the upper right-hand corner, then select "View profile."



Once you navigate to your profile, you should see all of the numbers we'd like you to enter.

Following. How many people are you following?

Text entry

Followers. How many followers do you have?

Text entry

Tweets. How many times have you tweeted?

Text entry

Join Year. What year did you join Twitter?

2006 ... 2016

Page 27 — iOS

How many people are you following, and how many followers do you have? These numbers are displayed on your profile. To view your profile, open the Twitter app, then tap on the "Me" button near the bottom right-hand corner of the screen.

If you're using a mobile browser instead of the app, tap on your profile picture, which should be near the top right-hand corner of your screen. Then tap "Profile."

Once you've reached your profile, you should see the number of people you're **following** and your number of **followers**.

Following. How many people are you following?

Text entry

Followers. How many followers do you have?

Text entry

Tweets. As you scroll down your profile and through your most recent tweets, a heading should appear at the top of your screen showing the number of times you've tweeted. If you're able to locate this number, please enter it here. (Optional)

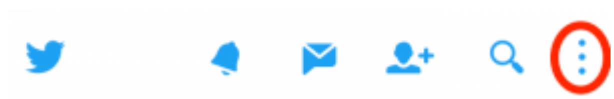
Text entry

Join Year. Do you remember what year you joined Twitter? Twitter was founded in 2006. If you don't remember what year you joined, leave this blank. (Optional)

2006 ... 2016

Page 27 — Android

How many people are you following, and how many followers do you have? These numbers are displayed on your profile. To view your profile, open the Twitter app, tap on the three vertical dots in the upper right-hand corner, then tap on your username.



If you're using a mobile browser instead of the app, tap on your profile picture, which should be near the top right-hand corner of your screen. Then tap "Profile."

Once you've reached your profile, you should see the number of people you're **following** and your number of **followers**.

Following. How many people are you following?

Text entry

Followers. How many followers do you have?

Text entry

Tweets. As you scroll down your profile and through your most recent tweets, a heading should appear at the top of your screen showing the number of times you've tweeted. If you're able to locate this number, please enter it here. (Optional)

Text entry

Join Year. Do you remember what year you joined Twitter? Twitter was founded in 2006. If you don't remember what year you joined, leave this blank. (Optional)

2006 ... 2016

Appendix 3f: Closing questionnaire — instructions for Facebook

Page 5

We would like to customize instructions for tasks in the next section based on the device you're using right now to complete this questionnaire. What type of device are you using?

Desktop or laptop computer, iPhone (or iPad), Android phone (or Android tablet)

Page 6

For the next part of this questionnaire, we'd like you to log on to your personal Facebook account. A personal account is one that you use to post on your own behalf, rather than on behalf of someone else or an organization.

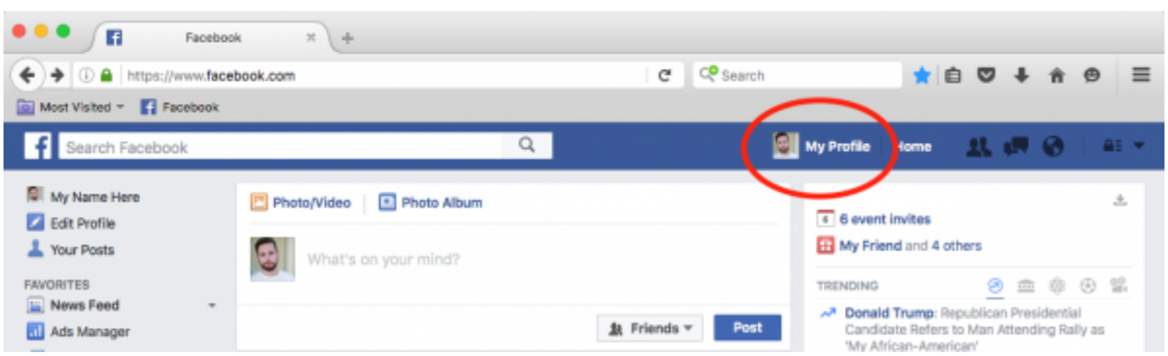
If you have more than one personal account on Facebook, please log into the account you post from most often.

It is **extremely important** that you log in now and provide accurate information in this section.

Page 7 — Desktop

Once you have logged in, **navigate to your profile** where your most recent Facebook posts are displayed.

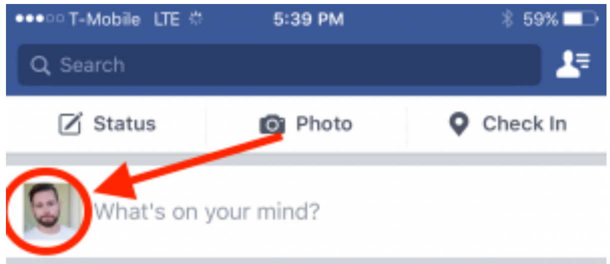
To view your profile (also known as the Timeline), log onto Facebook, then **click on your name** in the upper right-hand corner. This will take you to your profile where your most recent posts are displayed.



Page 7 — iOS and Android

Once you have logged in, **navigate to your profile** where your most recent Facebook posts are displayed.

To view your profile (also known as the Timeline), open the Facebook app and find the box near the top with the words "What's on your mind?" Tap on your profile photo next to those words. This will take you to your profile where your most recent posts are displayed.



Page 8

Please recall the date and time you joined this study, which you may have written down somewhere (your join date and time should also be included in the first email we sent you). If you don't remember the date and time you joined, count back roughly seven days from today's date.

Since the date and time you joined this study, about how many Facebook posts have you authored? Looking through your Facebook profile, please count the number of posts you authored during the study period and enter the number here. A post is authored by you when it begins with your profile photo and your name. Be careful not to count ones that others have posted to your profile.

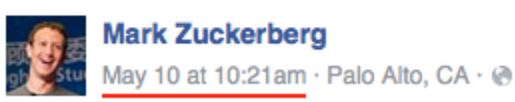
Text entry

Page 9 — Desktop

Next, we'll ask you to complete a set of tasks where you'll copy and paste your **ten most recent Facebook posts** and then rate what you were feeling in each of them. Some of these posts may be from more than seven days ago, which is fine if that's the case.

Again, we're looking for the ten most recent posts that you authored, avoiding those that someone else posted to your profile. Copy and paste only the text of the post (include hashtags and anything else that is in the text of the post). If you are unable to copy and paste, please type this text manually.

Take note of each post's <u>date and time</u> as well.



Page 9 — iOS

Next, we'll ask you to complete a set of tasks where you'll copy and paste your **<u>ten most recent Facebook posts</u>** and then rate what you were feeling in each of them. <u>Some of these posts may be from more than seven days ago</u>, which is fine if that's the case.

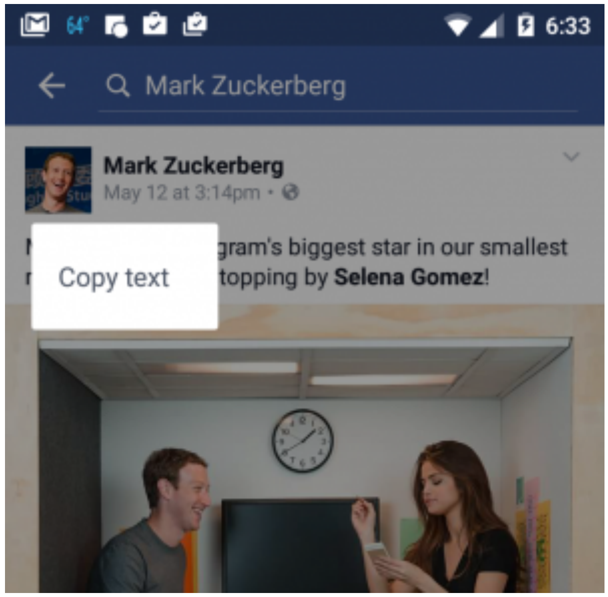
Again, we're looking for the ten most recent posts that <u>you authored</u>, avoiding those that someone else posted to your profile. Copy and paste <u>only the text</u> of the post (include hashtags and anything else that is in the text of the post). <u>Tap and hold on the text</u> until you see a "Copy" button. If you are unable to copy and paste, please type this text manually.

Take note of each post's date and time as well.

Page 9 — Android

Next, we'll ask you to complete a set of tasks where you'll copy and paste your **ten most recent Facebook posts** and then rate what you were feeling in each of them. Some of these posts may be from more than seven days ago, which is fine if that's the case.

Again, we're looking for the ten most recent posts that you authored, avoiding those that someone else posted to your profile. Copy and paste only the text of the post (include hashtags and anything else that is in the text of the post). Tap and hold on the text until you see a "Copy text" button. If you are unable to copy and paste, please type this text manually.

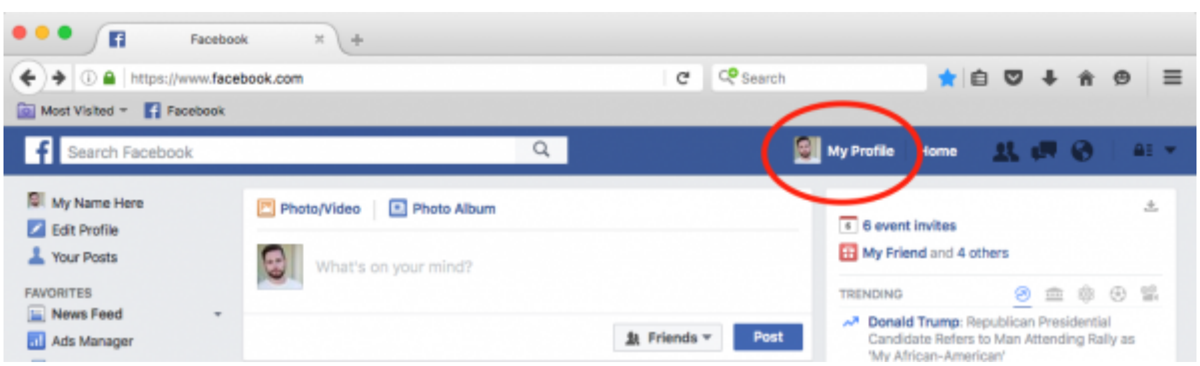


Take note of each post's date and time as well.

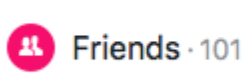
Pages 10-11 — Not needed for Facebook sample.

Page 27 — Desktop

How many friends do you have on Facebook? Log into Facebook and navigate to your profile by clicking on your name in the upper right-hand corner.



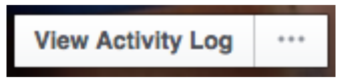
Along the left-hand side of your profile, you should see a box labeled "Friends" containing photos of your friends.



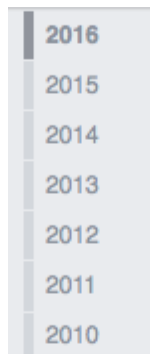
Next to the "Friends" heading, you should see a number. **Enter the number that appears for you:**

Text entry

What year did you join Facebook? If you're still on your profile, look for a button near the top that says "View Activity Log" and click on it.



Toward the upper right-hand side of your Activity Log, you should see a list of years from 2016 down to the earliest year you were a Facebook member.

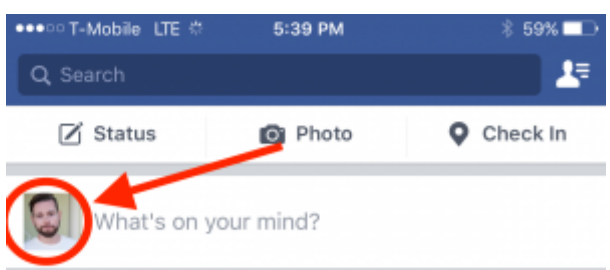


Select the earliest year displayed on your screen:

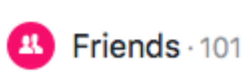
2004 ... 2016

Page 27 — iOS and Android

How many friends do you have on Facebook? Open the Facebook app and, from the main screen, navigate to your profile by tapping on your profile photo near the top next to the words "What's on your mind?"



As you scroll down your profile, you should see a box labeled "Friends" containing photos of your friends.



Next to the "Friends" heading, you should see a number. **Enter the number that appears for you:**

Text entry

What year did you join Facebook? If you're still on your profile, scroll back up to the top. Below your profile photo, you should see a button labeled "Activity Log." Please tap on this button.

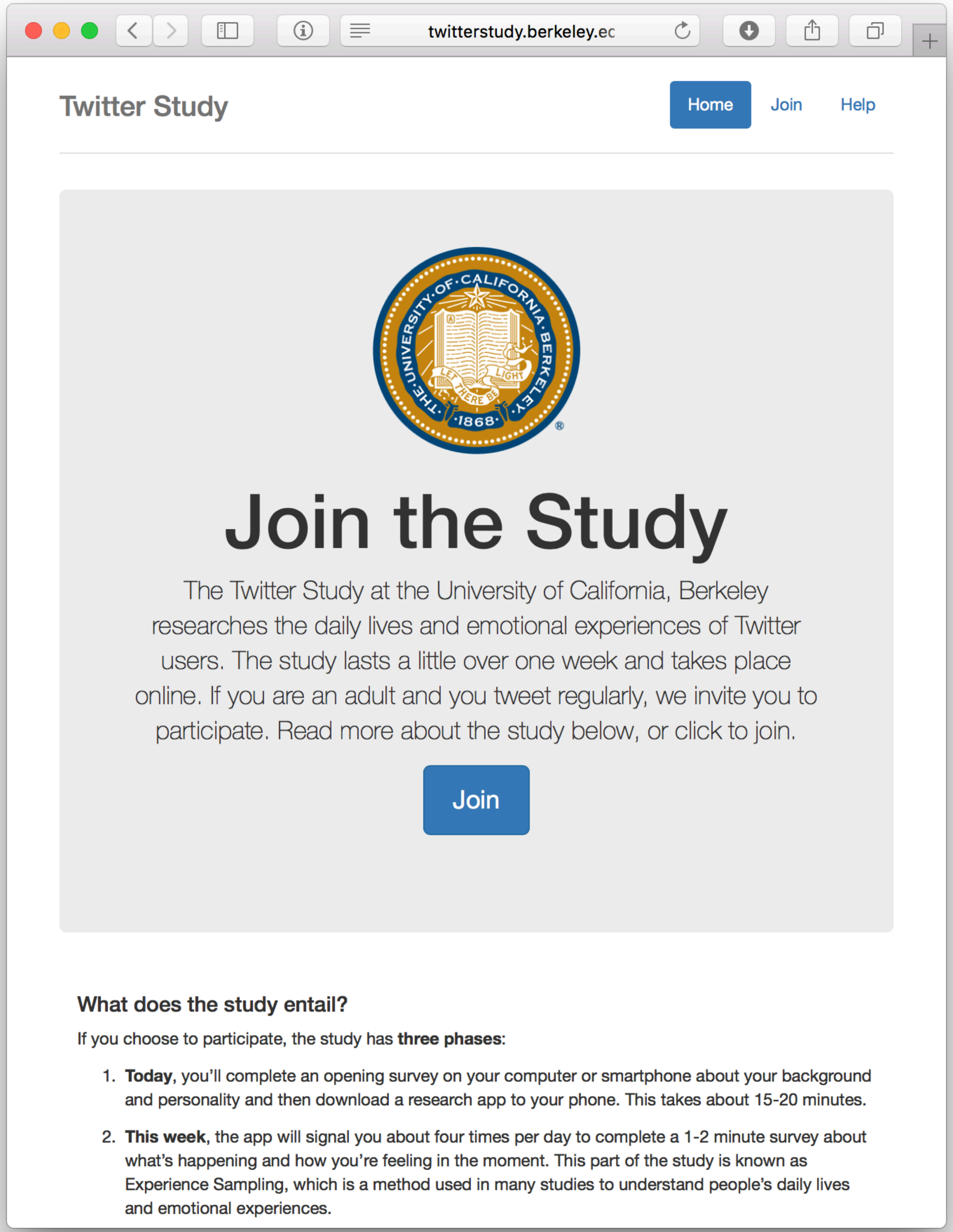
Scroll all the way down to the bottom of your Activity Log, where you should see a list of years from 2015 down to the earliest year you were a Facebook member. **Select the earliest year displayed on your screen:**

2004 ... 2016

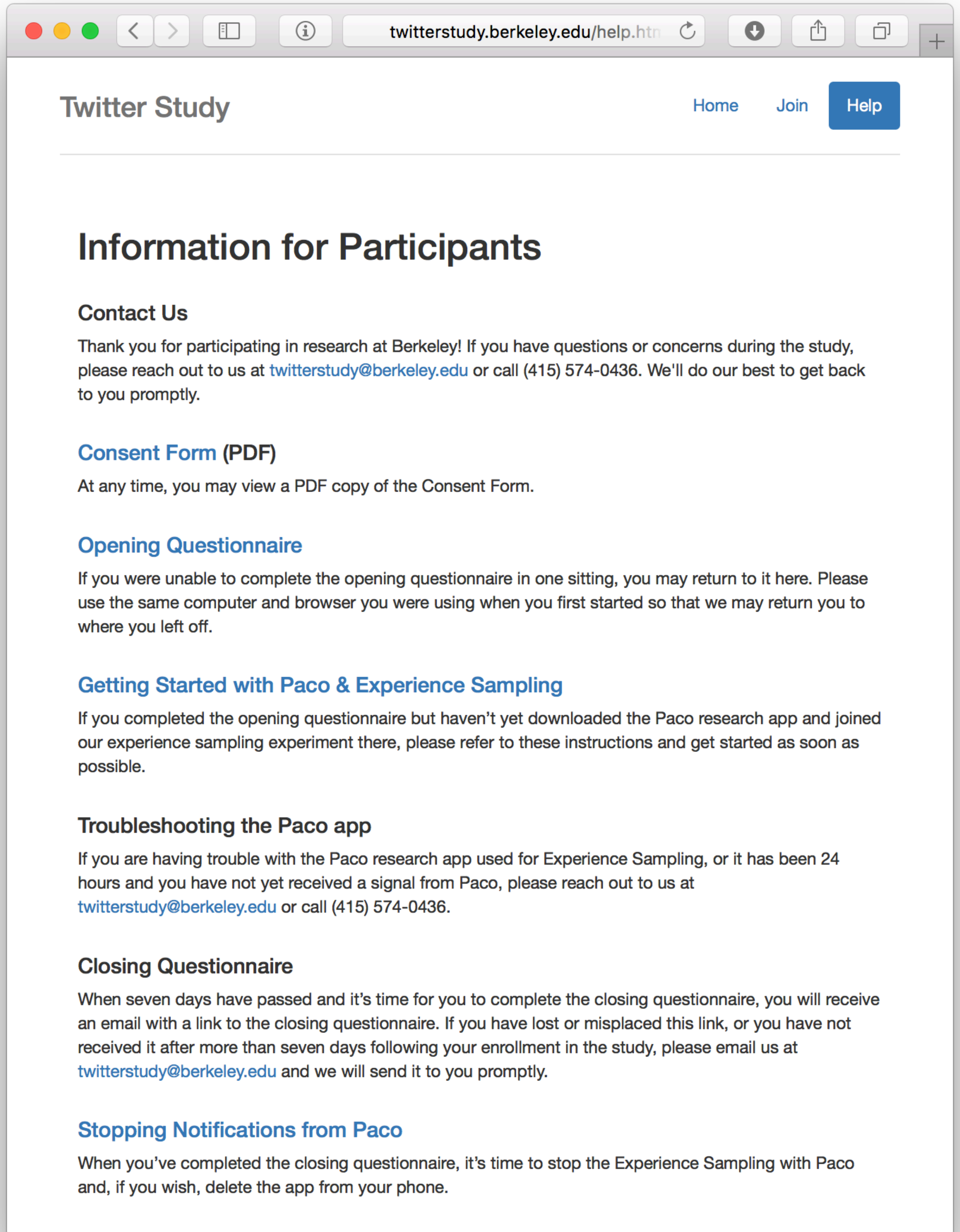
Appendix 4a: Twitter advertisement

This figure displays the advertisement that recruited most participants for the Twitter sample. A similar advertisement was generated for Facebook, but did not run for long due to cost. Participants were also recruited using listings on Craigslist and the Berkeley Xlab, as well as tasks on Amazon's Mechanical Turk service.

Appendix 4b: Study websites



This figure displays the main page of the website for the Twitter sample. Clicking the "Join" button brings visitors to the consent form, followed by the opening questionnaire. Below the fold of this page is information about study requirements and compensation. The website for the Facebook sample is nearly identical.



twitterstudy.berkeley.edu/help.htm

Twitter Study

Home Join Help

Information for Participants

Contact Us

Thank you for participating in research at Berkeley! If you have questions or concerns during the study, please reach out to us at twitterstudy@berkeley.edu or call (415) 574-0436. We'll do our best to get back to you promptly.

Consent Form (PDF)

At any time, you may view a PDF copy of the Consent Form.

Opening Questionnaire

If you were unable to complete the opening questionnaire in one sitting, you may return to it here. Please use the same computer and browser you were using when you first started so that we may return you to where you left off.

Getting Started with Paco & Experience Sampling

If you completed the opening questionnaire but haven't yet downloaded the Paco research app and joined our experience sampling experiment there, please refer to these instructions and get started as soon as possible.

Troubleshooting the Paco app

If you are having trouble with the Paco research app used for Experience Sampling, or it has been 24 hours and you have not yet received a signal from Paco, please reach out to us at twitterstudy@berkeley.edu or call (415) 574-0436.

Closing Questionnaire

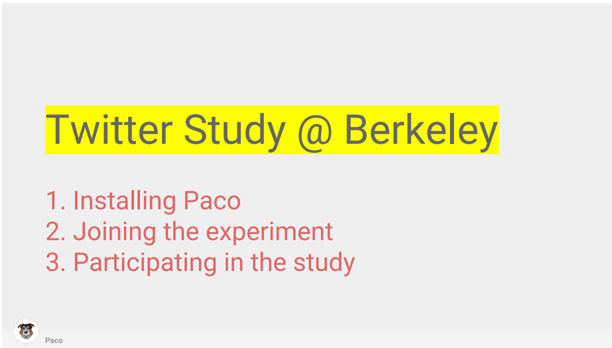
When seven days have passed and it's time for you to complete the closing questionnaire, you will receive an email with a link to the closing questionnaire. If you have lost or misplaced this link, or you have not received it after more than seven days following your enrollment in the study, please email us at twitterstudy@berkeley.edu and we will send it to you promptly.

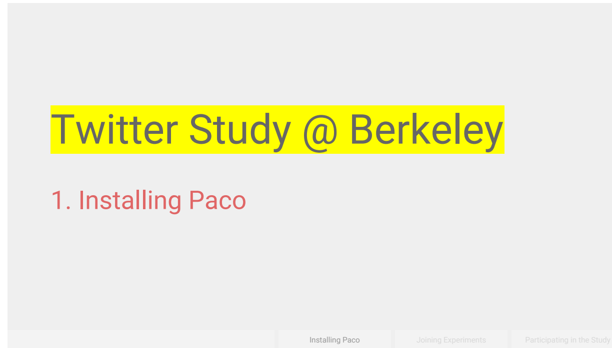
Stopping Notifications from Paco

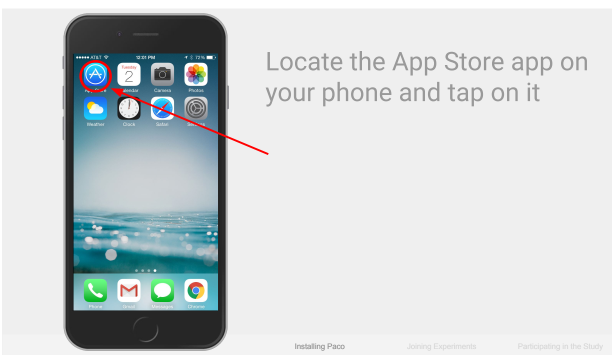
When you've completed the closing questionnaire, it's time to stop the Experience Sampling with Paco and, if you wish, delete the app from your phone.

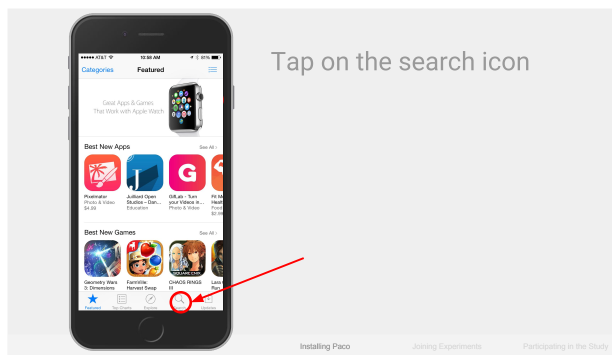
This page displays information for current participants.

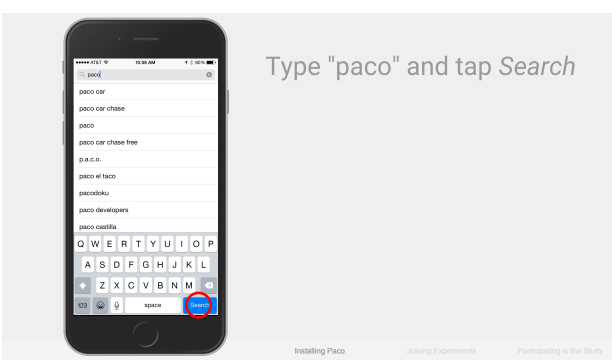
Appendix 4c: Experience sampling onboarding instructions — iPhone

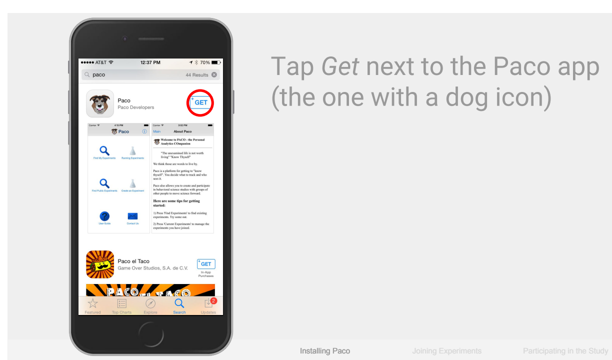




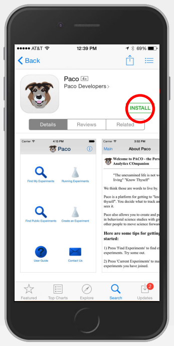




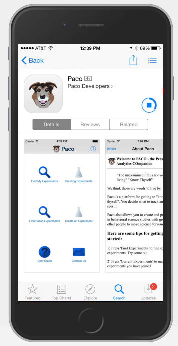




Onboarding instructions for Paco are provided as slides for participants to view or download. Shown in this appendix are instructions for iPhone with the Twitter sample. Slides for the Facebook sample are nearly identical. Instructions were adapted from the Paco User Manual (https://www.pacoapp.com/#/help).



Tap *Install*

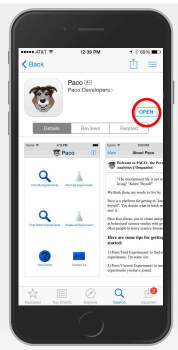


Wait for Paco to install.

Next you'll learn how to sign into Paco and join the experiment.

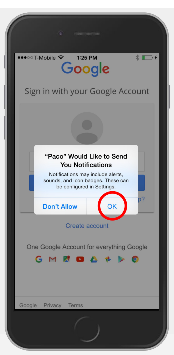
Twitter Study @ Berkeley

2. Joining the experiment



After Paco finishes installing, tap *Open*.

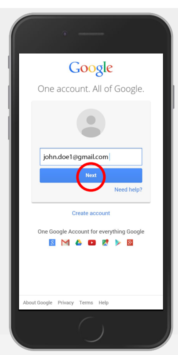
If you left the App Store, open Paco by tapping the Paco app on your home screen.



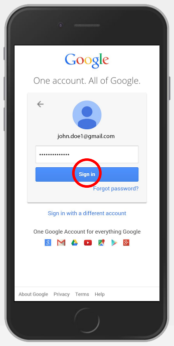
If prompted, tap *OK*

It's necessary to allow notifications for this study.

If you accidentally tap "Don't Allow," go to the Settings app, tap Notifications, tap on the Paco app (scroll down until you find it), then turn on "Allow Notifications."

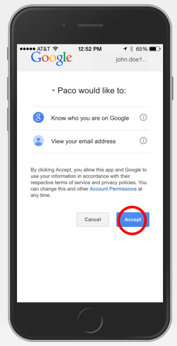


Sign in with the **same Google email** you gave us in the opening questionnaire and then tap *Next*



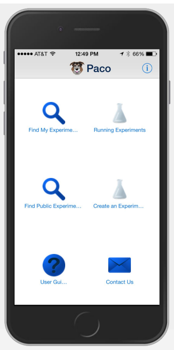
Enter your password for your **Google email** and tap *Sign In*

Installing Paco Joining Experiments Participating in the Study



Tap *Accept*. This transfers your name and your Google email to us for matching with your other responses.

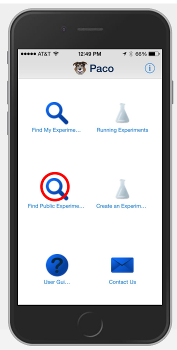
Installing Paco Joining Experiments Participating in the Study



You should now see Paco's main screen.

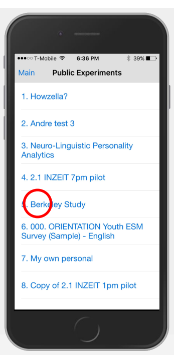
Let's join the experiment for our study.

Installing Paco Joining Experiments Participating in the Study



Tap *Find Public Experiments*

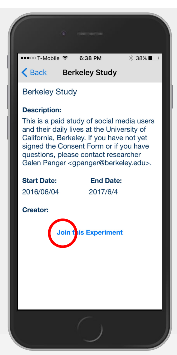
Installing Paco Joining Experiments Participating in the Study



Scroll through the list to find the Berkeley Study experiment. It might not be at the top!

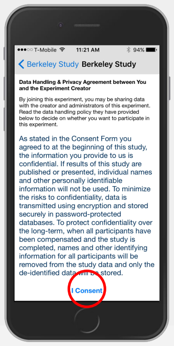
Tap on this experiment.

Installing Paco Joining Experiments Participating in the Study



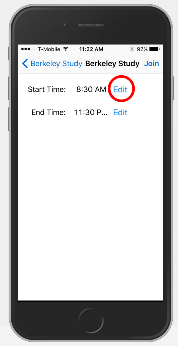
Tap *Join this Experiment*

Installing Paco Joining Experiments Participating in the Study



Tap *I Consent*

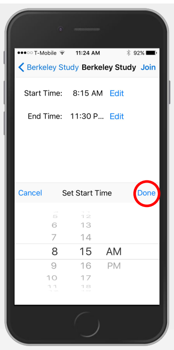
Installing Paco Joining Experiments Participating in the Study



If you want to customize when Paco signals you, tap *Edit* next to the time you want to change.

Set the Start Time to when you **normally wake up** and the End Time to when you **normally go to bed** (choose a time before midnight, otherwise you may receive an error).

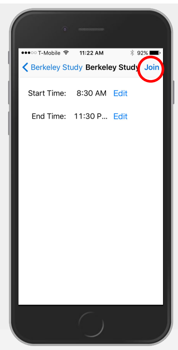
Installing Paco Joining Experiments Participating in the Study



Set the new time and tap *Done*.

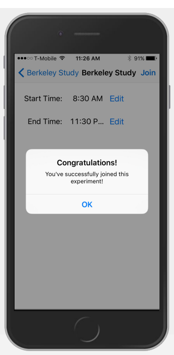
Repeat these steps for each time you want to change.

Installing Paco Joining Experiments Participating in the Study



When you're finished, tap *Join*

Installing Paco Joining Experiments Participating in the Study



You've now joined the experiment!

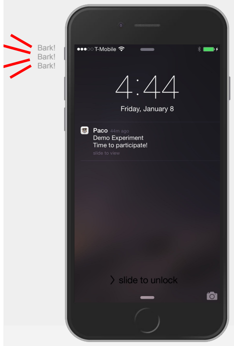
Next you'll learn how to participate in the study.

Installing Paco Joining Experiments Participating in the Study

Twitter Study @ Berkeley

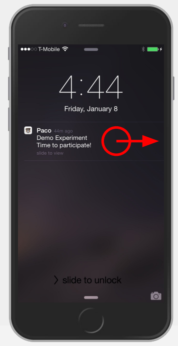
3. Participating in the Study

Installing Paco Joining Experiments Participating in the Study



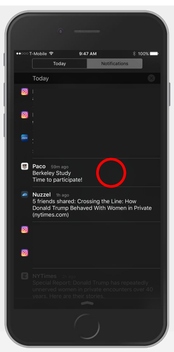
Four times per day at random times during your waking hours, Paco will "bark" and send you a notification.

That means it's time to participate! Pause what you are doing and respond as soon as it is safe to do so.

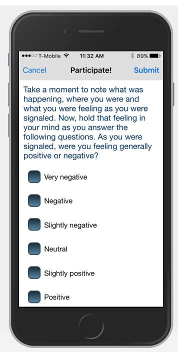


Participate by swiping the notification.

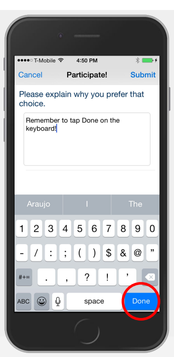
This takes you directly to the survey questions.



If you forget to swipe on it, you can also find the notification in your Notification Center. Swipe down from the top of your screen to reveal the Notification Center, then tap on the Paco notification.



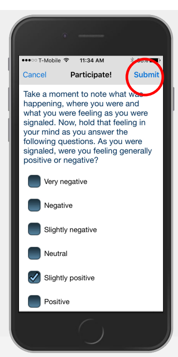
Answer all of the questions. It usually only takes about 1-2 minutes and will go more quickly as you get used to it.



After entering text, make sure to **tap *Done*** on the keyboard.

This is very important!

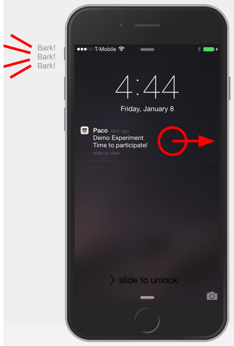
If you don't tap *Done*, the keyboard won't go away and could block other questions.



Once you finish answering all the questions, **tap *Submit*.**

This is very important!

If you don't tap *Submit*, your answers will not be recorded.

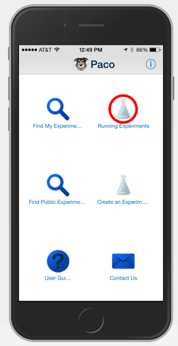


It's important to respond as soon as possible to each signal.

If you swipe on a notification after too long, Paco will let you know that it's expired.

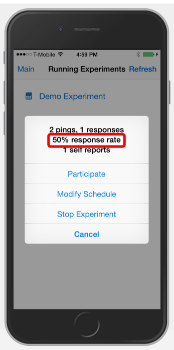
Tip: Turn up your ringer volume so that you hear the signals.

Installing Paco Joining Experiments Participating in the Study



You can also check to see if you missed signals by going to "Running Experiments" and tapping on the experiment name...

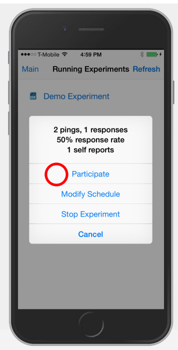
Installing Paco Joining Experiments Participating in the Study



...and reviewing your *response rate*.

Try to maintain a **100% response rate**. Doing so ensures we obtain the highest-quality results possible.

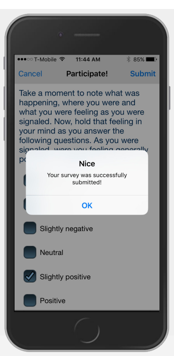
Installing Paco Joining Experiments Participating in the Study



If you have to miss a signal, you can voluntarily submit a survey as soon as possible after you were originally signaled.

Just tap *Participate* to submit a survey.

Installing Paco Joining Experiments Participating in the Study



That's it!

Remember:

- You will receive four signals per day during the study, which lasts seven days
- Respond every time you receive a signal, as soon as possible
- Don't forget to press *Done* to get rid of the keyboard, and *Submit* at the end
- If absolutely must miss a signal, you can volunteer one later by tapping *Participate*

Installing Paco Joining Experiments Participating in the Study

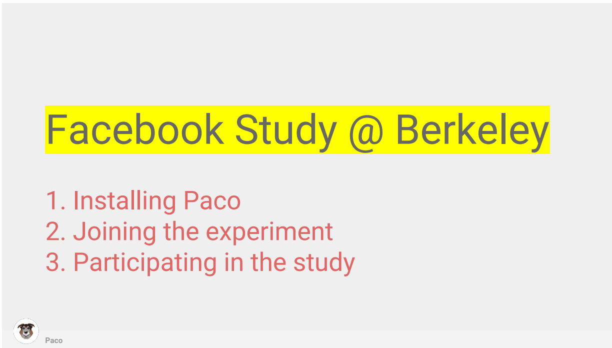
You're all set to participate in the study on Paco. You should receive your first signal today.

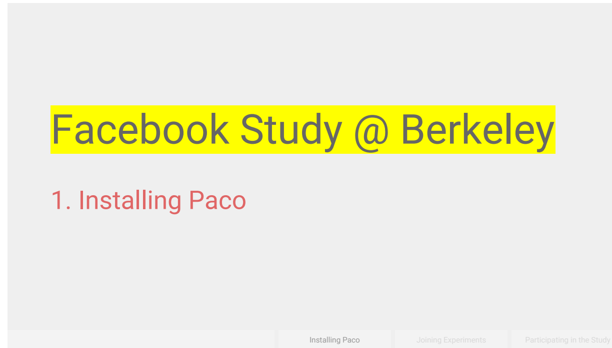
In seven days, you'll receive an email with a link to the Closing Questionnaire. Please look out for it!

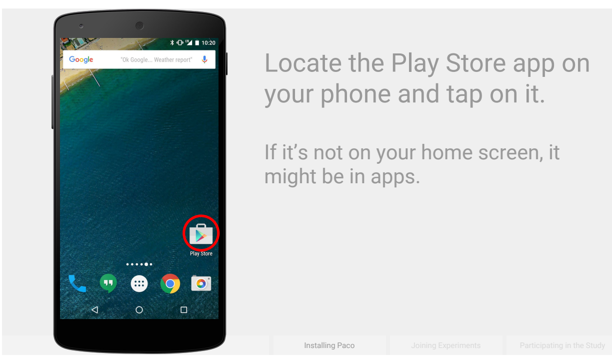
If you have questions, email us at twitterstudy@berkeley.edu.

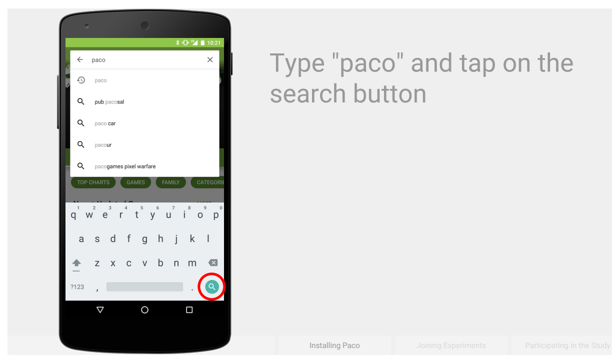
Thank you for participating in research at Berkeley!

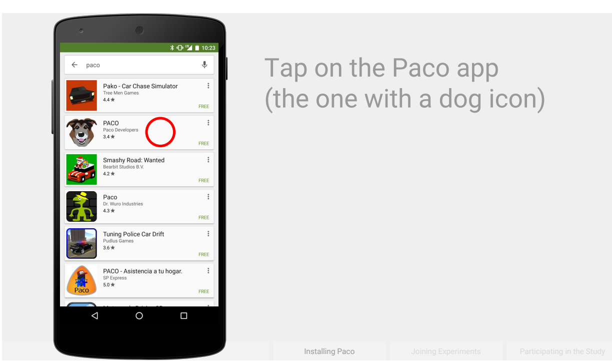
Appendix 4d: Experience sampling onboarding instructions — Android

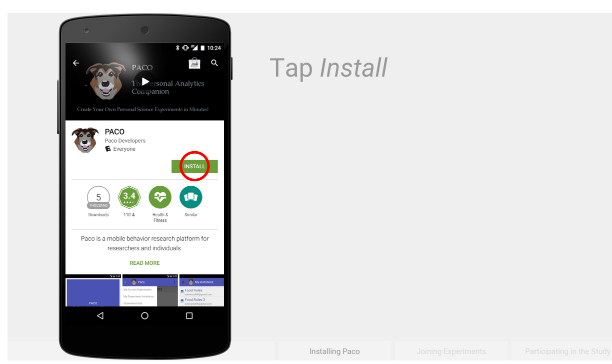




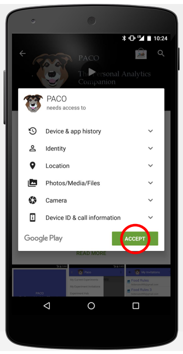






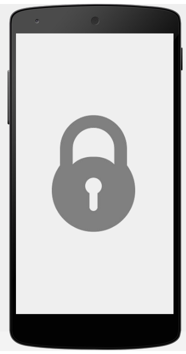


Onboarding instructions for Paco are provided as slides for participants to view or download. Shown in this appendix are instructions for Android with the Facebook sample. Slides for the Twitter sample are nearly identical. Instructions were adapted from the Paco User Manual (https://www.pacoapp.com/#/help).



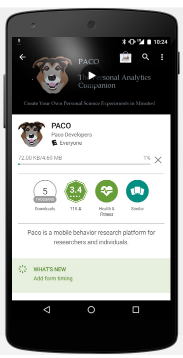
Tap *Accept*

If you join other experiments on Paco, those experiments may use the permissions you see on the left. **We do not.** Paco only transfers your name and Google email to us for matching with your other responses. You can join many experiments on Paco, but if you only join ours, these permissions will never be used.



If you have privacy or security concerns at any point during this study, or any questions about Paco, please reach out to us at facebookstudy@berkeley.edu or (415) 574-0436.

Safeguarding your privacy and confidentiality is extremely important to us.

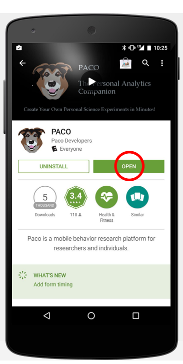


Now, wait for Paco to install.

Next you'll learn how to sign into Paco and join the experiment.

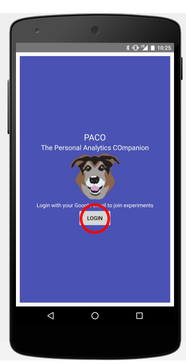
Facebook Study @ Berkeley

2. Joining the experiment

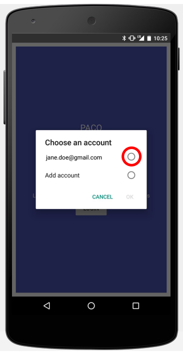


After Paco finishes installing, tap *Open*.

If you left the Play Store app, locate and tap on Paco in your apps.

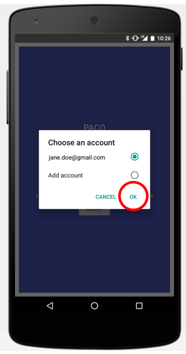


Tap *Login*

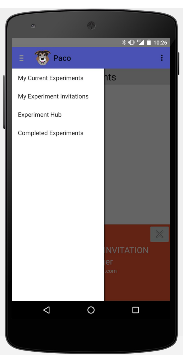


Locate and tap on the **same Google email** you gave us in the opening questionnaire.

If this email is not listed, tap *Add account* to add it.



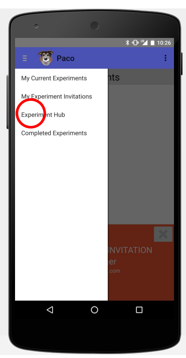
Tap *OK*



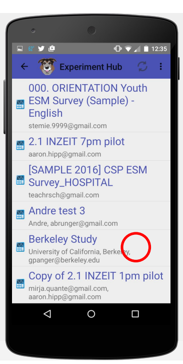
You should now see Paco's main menu.

If you don't see this menu, tap on the ☰ button to the left of the dog.

Let's join the experiment for our study.

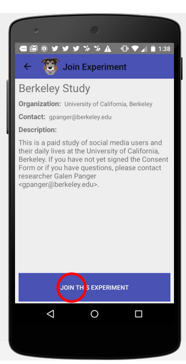


Tap *Experiment Hub*

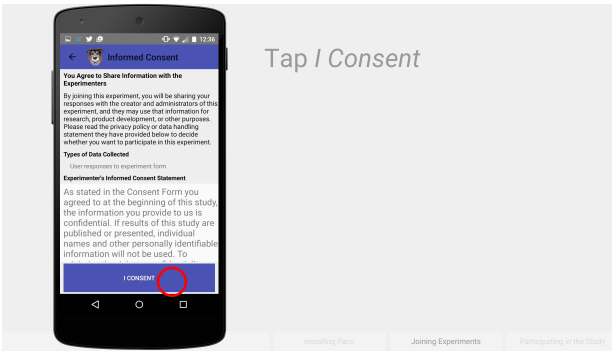


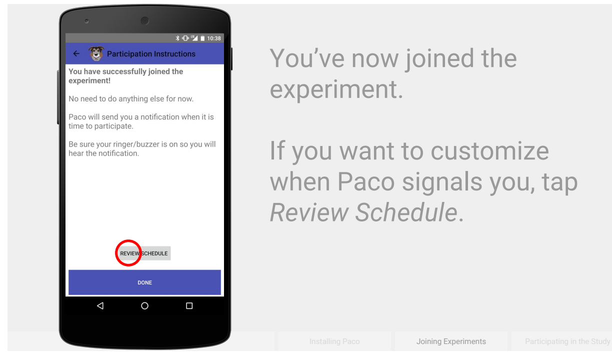
Scroll through the list to find the Berkeley Study experiment. It might not be at the top!

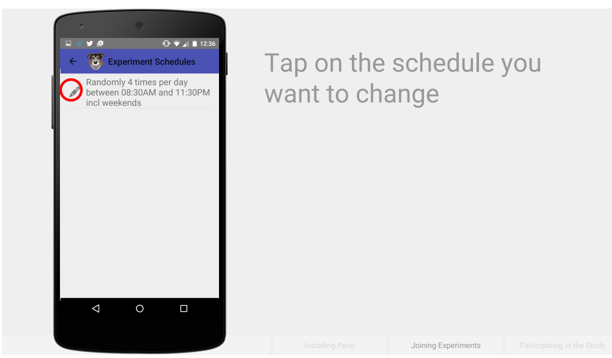
Tap on this experiment.

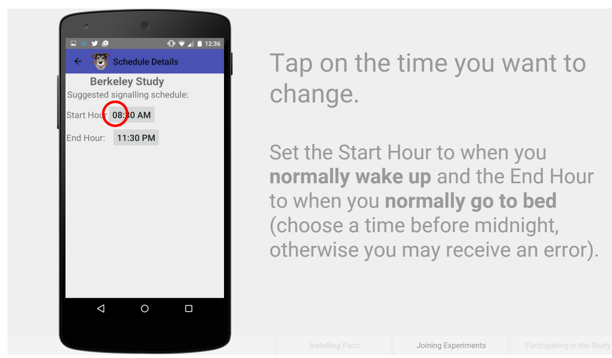


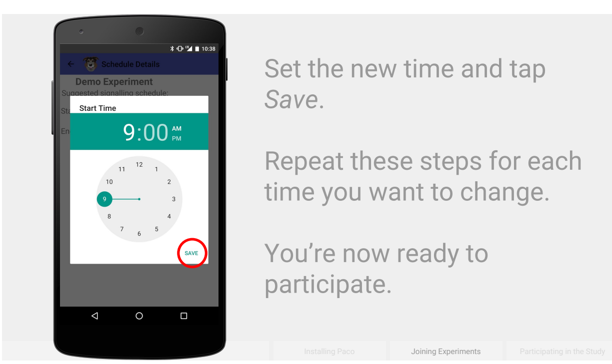
Tap *Join This Experiment*

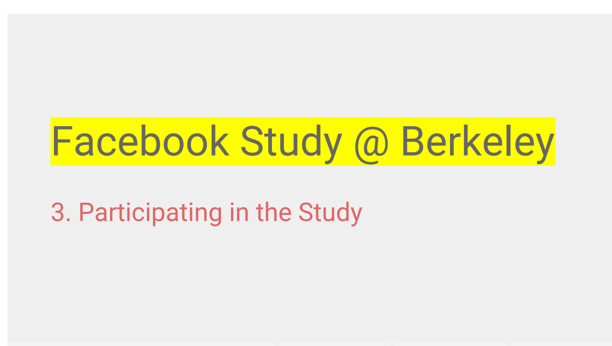

Informed Consent
I CONSENT
Tap *I Consent*
Installing Paco
Joining Experiments
Participating in the Study

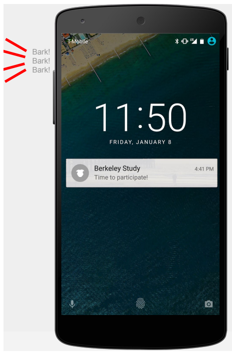

Participation Instructions
REVIEW SCHEDULE
DONE
You've now joined the experiment.
If you want to customize when Paco signals you, tap *Review Schedule*.
Installing Paco
Joining Experiments
Participating in the Study


Experiment Schedules
Randomly 4 times per day between 08:30AM and 11:30PM incl weekends
Tap on the schedule you want to change
Installing Paco
Joining Experiments
Participating in the Study


Schedule Details
Berkeley Study
Suggested signalling schedule:
End Hour:
11:30 PM
Tap on the time you want to change.
Set the Start Hour to when you **normally wake up** and the End Hour to when you **normally go to bed** (choose a time before midnight, otherwise you may receive an error).
Installing Paco
Joining Experiments
Participating in the Study

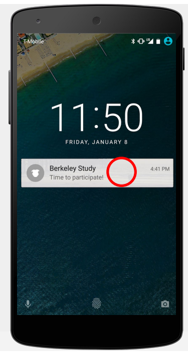

Schedule Details
Demo Experiment
Start Time
9:00
SAVE
Set the new time and tap *Save*.
Repeat these steps for each time you want to change.
You're now ready to participate.
Installing Paco
Joining Experiments
Participating in the Study


Facebook Study @ Berkeley
3. Participating in the Study
Installing Paco
Joining Experiments
Participating in the Study



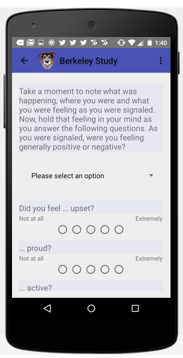
Four times per day at random times during your waking hours, Paco will "bark" and send you a notification.

That means it's time to participate! Pause what you are doing and respond as soon as it is safe to do so.

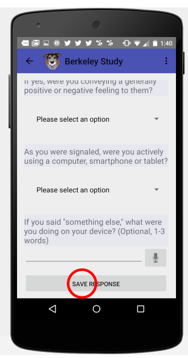


Participate by tapping on the notification.

This takes you directly to the survey questions.



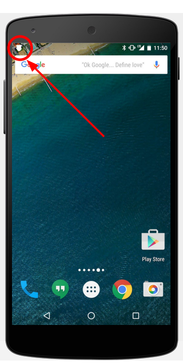
Answer all of the questions. It usually only takes about 1-2 minutes and will go more quickly as you get used to it.



Once you finish answering the questions, **tap *Save Response*** at the bottom.

This is very important!

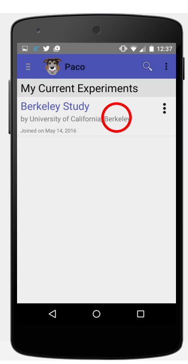
If you don't tap *Save Response*, your answers will not be recorded.



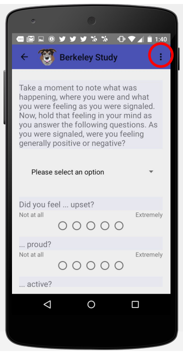
It's important to respond as soon as possible to each signal.

If you wait too long, the notification will disappear.

Tip: Turn up your ringer volume so that you hear the signals.



You can also check to see if you missed signals by tapping on the experiment name...



...tapping on the dots in the upper right...

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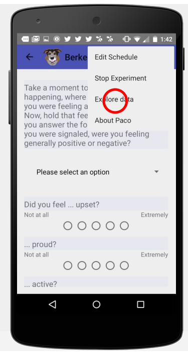

...tapping *Explore Data*...

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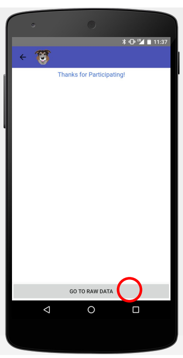

...tapping *Go to Raw Data*...

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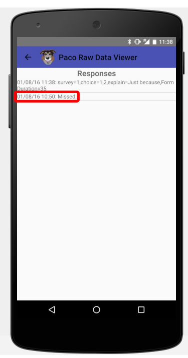

...and looking for "Missed" in your history of signals and responses

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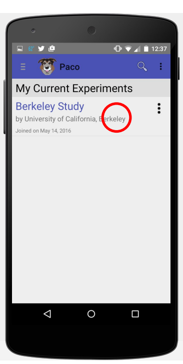

If you must miss a signal, you can voluntarily submit a survey as soon as possible after you were originally signaled. Just **tap on the experiment** in Paco to go to the questions at any time.

Self-reports should be used **only rarely** as a backup plan. Again, responding promptly to signals ensures we obtain the highest-quality results possible.

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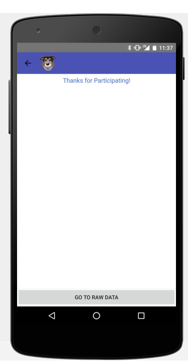

That's it!

Remember:

- You will receive four signals per day during the study, which lasts seven days
- Respond every time you receive a signal, as soon as possible
- Don't forget to tap *Save Response* when answering
- If you absolutely must miss a signal, you can make it up by self-reporting

Installing Paco | Joining Experiments | Participating in the Study

You're all set to participate in the study on Paco. You should receive your first signal today.

In seven days, you'll receive an email with a link to the Closing Questionnaire. Please look out for it!

If you have questions, email us at facebookstudy@berkeley.edu

Thank you for participating in research at Berkeley!

Appendix 5a: Descriptive statistics — Facebook sample

Continuous Variables

Name	***N***	**Min**	**Mean**	**Median**	**Max**	***SD***
Self-Monitoring Scale	344	1.08	1.53	1.52	2.00	0.18
SMS Other-Directedness	344	1.00	1.53	1.50	2.00	0.25
Social Desirability Scale	330	1.03	1.52	1.52	2.00	0.19
Conscientiousness (Big Five)	344	1.78	3.82	3.89	5.00	0.74
Concern for Information Privacy	330	2.25	5.89	6.00	7.00	0.89
Posting Concerns	330	1.00	4.63	5.00	7.00	1.66
Content Impression Management	330	1.00	2.73	2.67	5.00	0.91
Expressive Suppression	344	1.00	3.62	3.50	7.00	1.31
Depression CESD-R (Opening)	344	1.00	1.67	1.45	4.70	0.66
Depression CESD-R (Closing)	344	1.00	1.62	1.45	4.40	0.62
Neuroticism (Big Five)	344	1.00	2.80	2.81	5.00	0.93
Negative Expressivity	344	1.00	3.72	3.67	7.00	1.11
Venting (Brief COPE)	344	1.00	2.17	2.00	4.00	0.82
Emotional Support (Brief COPE)	344	1.00	2.73	3.00	4.00	0.98
Extraversion (Big Five)	344	1.00	3.06	3.13	5.00	0.96
Satisfaction with Life (Opening)	344	1.00	4.52	4.80	7.00	1.44
Satisfaction with Life (Closing)	344	1.00	4.50	4.80	7.00	1.48
Openness (Big Five)	344	1.00	3.72	3.80	5.00	0.70
Agreeableness (Big Five)	344	1.44	3.78	3.89	5.00	0.73
PANAS Positive Activation	344	1.00	3.07	3.10	5.00	0.85
PANAS Negative Activation	344	1.00	1.67	1.40	4.20	0.71
Age	344	12	33	31	71	10
Income (In $25,000 Increments)	344	1	2	2	5	1
Friends	331	8	524	321	4,192	635
Tenure (Years Since Joining)	330	0	7.40	7	12	2.51
SUFs Per Day (In Date Range)	344	0.25	1.33	1.00	5.00	0.85
ESFs Per Day (In Date Range)	344	1.00	3.17	3.33	5.67	0.78

Gender

Male	39% (133)
Female	61% (209)
Other	0% (2)

Race or Ethnicity

White, Caucasian	62% (213)
Asian	16% (55)
Black, African-American	8% (28)
Hispanic, Latino	4% (15)
Native American, Alaska Native	0% (2)
Pacific Islander, Native Hawaiian	0% (1)
Mixed Race or Ethnicity	7% (23)
Other	2% (7)

Dichotomous Variables

	Yes	**No**
College Degree	55% (190)	45% (154)
Public Status Updates	10% (34)	90% (296)
Uses Full Name	74% (244)	26% (86)
In Profile Picture	80% (263)	20% (67)

Appendix 5b: Descriptive statistics — Twitter sample

Continuous Variables

Name	***N***	**Min**	**Mean**	**Median**	**Max**	***SD***
Self-Monitoring Scale	352	1.08	1.50	1.48	1.96	0.17
SMS Other-Directedness	352	1.00	1.51	1.50	2.00	0.24
Social Desirability Scale	322	1.03	1.51	1.52	1.97	0.16
Conscientiousness (Big Five)	352	1.22	3.58	3.56	5.00	0.71
Concern for Information Privacy	322	3.38	6.09	6.25	7.00	0.73
Posting Concerns	322	1.00	3.97	4.00	7.00	1.48
Content Impression Management	322	1.00	2.66	2.67	5.00	0.88
Expressive Suppression	352	1.00	3.65	3.75	7.00	1.21
Depression CESD-R (Opening)	352	1.00	1.85	1.65	4.55	0.71
Depression CESD-R (Closing)	352	1.00	1.80	1.55	4.30	0.73
Neuroticism (Big Five)	352	1.00	3.03	3.13	5.00	0.85
Negative Expressivity	352	1.00	3.70	3.67	7.00	1.12
Venting (Brief COPE)	352	1.00	2.14	2.00	4.00	0.82
Emotional Support (Brief COPE)	352	1.00	2.62	2.50	4.00	0.96
Extraversion (Big Five)	352	1.00	3.16	3.25	5.00	0.91
Satisfaction with Life (Opening)	352	1.00	4.23	4.40	6.80	1.33
Satisfaction with Life (Closing)	352	1.00	4.19	4.40	7.00	1.42
Openness (Big Five)	352	1.40	3.96	4.10	5.00	0.65
Agreeableness (Big Five)	352	1.44	3.74	3.78	5.00	0.65
PANAS Positive Activation	352	1.00	3.05	3.10	5.00	0.79
PANAS Negative Activation	352	1.00	2.06	1.90	4.60	0.79
Age	352	15	33	29	70	13
Income (In $25,000 Increments)	350	1	2	2	5	1
Following	322	10	646	297	6,690	876
Followers	322	7	721	282	19,948	1,514
Tenure (Years Since Joining)	295	0	4.54	5	9	2.57
SUFs Per Day (In Date Range)	352	0.25	2.65	1.69	15.00	2.51
ESFs Per Day (In Date Range)	352	0.80	2.93	3.00	5.14	0.88

Gender

Male	28% (98)
Female	69% (242)
Other	3% (12)

Race or Ethnicity

White, Caucasian	61% (215)
Black, African-American	11% (38)
Hispanic, Latino	10% (34)
Asian	9% (30)
Native American, Alaska Native	0% (0)
Pacific Islander, Native Hawaiian	0% (0)
Mixed Race or Ethnicity	9% (31)
Other	1% (4)

Dichotomous Variables

	Yes	**No**
College Degree	53% (185)	47% (167)
Public Status Updates	84% (271)	16% (51)
Uses Full Name	36% (116)	64% (206)
In Profile Picture	69% (223)	31% (99)

Appendix 6: Correlates of SUFs and ESFs per day

	SUFs Per Day				**ESFs Per Day**			
	Facebook		Twitter		Facebook		Twitter	
Variable	***r***	***p***	***r***	***p***	***r***	***p***	***r***	***p***
SUFs Per Day (In Date Range)	-	-	-	-	-0.08	0.1465	**-0.14**	0.0088
ESFs Per Day (In Date Range)	-0.08	0.1465	**-0.14**	0.0088	-	-	-	-
Self-Monitoring Scale	0.09	0.1133	-0.04	0.4589	0.07	0.1881	0.02	0.7412
SMS Other-Directedness	0.03	0.5691	-0.05	0.3133	0.00	0.9548	0.03	0.5727
Social Desirability Scale	0.01	0.8642	-0.05	0.3963	0.02	0.6855	-0.04	0.4273
Conscientiousness (Big Five)	-0.04	0.4168	-0.08	0.1269	0.08	0.1619	**0.15**	0.0043
Concern for Information Privacy	0.02	0.6599	**0.12**	0.0280	0.04	0.4328	0.07	0.2401
Posting Concerns	**-0.16**	0.0028	**-0.16**	0.0039	-0.01	0.9183	0.03	0.5388
Content Impression Management	0.01	0.8072	-0.08	0.1603	-0.08	0.1264	-0.05	0.3815
Expressive Suppression	**-0.16**	0.0024	-0.01	0.8001	0.05	0.3701	-0.01	0.7944
Depression CESD-R (Opening)	0.08	0.1427	**0.12**	0.0264	0.01	0.9121	**-0.11**	0.0412
Depression CESD-R (Closing)	0.04	0.4791	**0.13**	0.0123	0.00	0.9969	**-0.11**	0.0344
Neuroticism (Big Five)	0.09	0.0954	**0.11**	0.0336	-0.06	0.2938	-0.08	0.1528
Negative Expressivity	0.05	0.3140	0.03	0.5419	-0.07	0.1775	-0.01	0.7951
Venting (Brief COPE)	0.08	0.1460	**0.11**	0.0313	-0.09	0.1150	-0.05	0.3076
Emotional Support (Brief COPE)	0.08	0.1283	-0.06	0.2851	-0.08	0.1597	0.07	0.1779
Extraversion (Big Five)	0.05	0.3691	-0.03	0.5621	**-0.11**	0.0408	-0.03	0.6232
Satisfaction with Life (Opening)	**-0.12**	0.0292	**-0.14**	0.0110	0.01	0.7885	**0.11**	0.0429
Satisfaction with Life (Closing)	**-0.13**	0.0162	**-0.14**	0.0091	0.01	0.9001	0.07	0.1677
Openness (Big Five)	0.02	0.7311	0.02	0.6509	-0.05	0.3976	-0.03	0.5436
Agreeableness (Big Five)	-0.02	0.7061	0.02	0.7136	0.06	0.2337	0.09	0.1081
PANAS Positive Activation	-0.02	0.6768	-0.03	0.5846	-0.05	0.3654	0.07	0.1704
PANAS Negative Activation	0.05	0.3264	**0.14**	0.0083	**-0.12**	0.0294	**-0.12**	0.0207
Age	**0.14**	0.0086	0.09	0.0808	0.03	0.6265	-0.03	0.5965
Income (In $25,000 Increments)	0.04	0.4265	0.04	0.4365	-0.04	0.4431	-0.02	0.6785
Log of Friends	-0.07	0.1867	-	-	**-0.11**	0.0375	-	-
Log of Following	-	-	**0.23**	0.0000	-	-	**-0.13**	0.0165
Log of Followers	-	-	**0.25**	0.0000	-	-	**-0.16**	0.0034
Tenure (Years Since Joining)	-0.07	0.1924	**0.13**	0.0283	0.05	0.3370	-0.03	0.6376
Female	0.03	0.5896	0.07	0.2209	0.01	0.8840	0.02	0.7489
College Degree	-0.07	0.1690	-0.02	0.7717	0.03	0.5624	0.06	0.2843
Public Status Updates	-0.04	0.4619	0.09	0.1056	0.08	0.1367	-0.06	0.3254
Uses Full Name	-0.05	0.3804	**-0.15**	0.0092	0.00	0.9788	**0.12**	0.0320
In Profile Picture	-0.09	0.1203	-0.11	0.0513	-0.02	0.7011	0.05	0.3662

Bolded correlation coefficients are statistically significant at the $p < .05$ level.

	SUFs Per Day						ESFs Per Day					
	Facebook			Twitter			Facebook			Twitter		
	Est.	**SE**	***p***	**Est.**	**SE**	***p***	**Est.**	**SE**	***p***	**Est.**	**SE**	***p***
Hispanic, Latino	-0.28	0.23	0.220	0.83	0.46	0.073	0.17	0.21	0.409	-0.29	0.16	0.075
Black, Afr.-Am.	0.20	0.17	0.246	**1.02**	0.44	0.021	-0.30	0.16	0.054	-0.20	0.15	0.186
Asian	**-0.39**	0.13	0.003	-0.46	0.48	0.343	-0.05	0.12	0.646	0.14	0.17	0.417
Pac. Isl., Nat. Haw.	-0.41	0.84	0.630	-	-	-	0.07	0.78	0.930	-	-	-
Nat. Am., Ala. Nat.	0.06	0.60	0.927	-	-	-	0.37	0.55	0.503	-	-	-
Mixed Race or Eth.	-0.23	0.18	0.207	0.65	0.48	0.172	-0.24	0.17	0.169	0.07	0.17	0.671
Other	-0.13	0.32	0.694	-1.07	1.26	0.396	-0.44	0.30	0.142	-0.26	0.44	0.561
Constant	1.41	0.06	0.000	2.45	0.17	0.000	3.22	0.05	0.000	2.97	0.06	0.000
N	344			352			344			352		
R^2	0.04			0.03			0.03			0.02		

Each of the four columns represents one regression of SUFs or ESFs per day on race/ethnicity. Bolded regression coefficients are statistically significant at the $p < .05$ level. There are no observations in the Twitter sample for Pacific Islander, Native Hawaiian and Native American, Alaska Native.

Appendix 7a: Comparison of status updates with emotional experience — Facebook

Emotion	***M*** SUF	***SD*** SUF	***M*** ESF	***SD*** ESF	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.37	0.98	2.52	0.83	-0.15	343	-3.43	0.0007	0.0003	0.17
Afraid	1.26	0.60	1.30	0.54	-0.04	343	-1.55	0.1229	0.0615	0.07
Amused	2.39	1.00	1.92	0.76	0.46	343	8.78	0.0000	0.0000	0.52
Angry	1.45	0.70	1.37	0.52	0.09	343	2.39	0.0175	0.0087	0.14
Anxious	1.54	0.73	1.67	0.76	-0.12	343	-3.32	0.0010	0.0005	0.17
Ashamed	1.23	0.54	1.26	0.53	-0.03	343	-1.15	0.2503	0.1252	0.06
In Awe	1.90	0.87	1.48	0.66	0.42	343	10.50	0.0000	0.0000	0.54
Bored	1.47	0.70	1.68	0.63	-0.21	343	-6.70	0.0000	0.0000	0.32
Calm	2.86	1.01	3.08	0.87	-0.23	343	-5.66	0.0000	0.0000	0.24
Depressed	1.35	0.60	1.41	0.65	-0.06	343	-2.23	0.0267	0.0134	0.10
Disgusted	1.40	0.69	1.30	0.52	0.09	343	2.84	0.0047	0.0024	0.16
Dissatisfied	1.56	0.77	1.56	0.67	0.00	343	-0.07	0.9474	0.4737	0.00
At Ease	2.70	1.05	2.94	0.89	-0.23	343	-5.95	0.0000	0.0000	0.24
Enthusiastic	2.44	1.06	2.18	0.88	0.26	343	5.65	0.0000	0.0000	0.27
Envious	1.28	0.59	1.33	0.57	-0.04	343	-1.58	0.1146	0.0573	0.07
Excited	2.37	1.07	2.06	0.84	0.30	343	6.45	0.0000	0.0000	0.31
Happy	2.94	1.11	2.85	0.93	0.09	343	1.92	0.0551	0.0276	0.09
Hostile	1.28	0.55	1.29	0.50	-0.01	343	-0.29	0.7699	0.3849	0.01
Inspired	2.26	0.99	2.03	0.85	0.24	343	5.58	0.0000	0.0000	0.26
Interested	2.77	1.05	2.58	0.88	0.18	343	4.05	0.0001	0.0000	0.19
Lonely	1.40	0.75	1.47	0.73	-0.07	343	-2.49	0.0131	0.0065	0.10
Loving	2.71	1.23	2.56	1.08	0.15	343	3.10	0.0021	0.0011	0.13
Nervous	1.40	0.62	1.52	0.69	-0.12	343	-3.72	0.0002	0.0001	0.18
Passive	1.82	0.88	2.17	0.89	-0.34	343	-9.44	0.0000	0.0000	0.39
Peaceful	2.72	1.09	2.90	0.93	-0.18	343	-4.67	0.0000	0.0000	0.18
Proud	2.51	1.08	2.10	0.91	0.42	343	8.10	0.0000	0.0000	0.42
Relaxed	2.75	1.03	2.95	0.86	-0.20	343	-4.55	0.0000	0.0000	0.21
Sad	1.45	0.68	1.43	0.61	0.02	343	0.68	0.4980	0.2490	0.03
Satisfied	2.69	1.08	2.72	0.91	-0.03	343	-0.65	0.5169	0.2584	0.03
Sick	1.26	0.56	1.36	0.57	-0.10	343	-3.56	0.0004	0.0002	0.18
Sleepy	1.68	0.80	2.09	0.77	-0.40	343	-10.09	0.0000	0.0000	0.52
Stirred Up	1.73	0.80	1.67	0.67	0.06	343	1.73	0.0854	0.0427	0.09
Surprised	1.74	0.80	1.53	0.65	0.21	343	5.26	0.0000	0.0000	0.29
Tired	1.76	0.84	2.20	0.82	-0.44	343	-10.76	0.0000	0.0000	0.53
Unhappy	1.53	0.70	1.54	0.67	-0.01	343	-0.26	0.7921	0.3960	0.01
Upset	1.56	0.71	1.52	0.62	0.03	343	0.86	0.3920	0.1960	0.05

Emotion	*M* SUF	*SD* SUF	*M* ESF	*SD* ESF	Diff	*df*	*t*	*p* 2-Tail	*p* 1-Tail	*d*
Positive-Negative	5.24	1.18	5.01	0.87	0.23	343	3.89	0.0001	0.0001	0.23
Activated (Scale)	1.86	0.54	1.83	0.52	0.03	343	1.42	0.1579	0.0789	0.06
Deactivated (Scale)	2.06	0.53	2.36	0.49	-0.30	343	-13.86	0.0000	0.0000	0.60
Positive (Scale)	2.67	0.92	2.61	0.78	0.06	343	1.66	0.0969	0.0484	0.07
Negative (Scale)	1.45	0.58	1.46	0.58	-0.01	343	-0.37	0.7097	0.3549	0.02
PANAS PA (Scale)	2.47	0.87	2.28	0.75	0.19	343	5.77	0.0000	0.0000	0.23
PANAS NA (Scale)	1.35	0.50	1.38	0.51	-0.03	343	-1.46	0.1455	0.0727	0.07

In the table, "SUF" and "ESF" are abbreviations for status update form and experience sampling form, respectively. "Diff" is the difference between SUF and ESF averages. Two-tailed and one-tailed *p*-values are shown.

Appendix 7b: Comparison of status updates with emotional experience — Twitter

Emotion	*M* SUF	*SD* SUF	*M* ESF	*SD* ESF	Diff	*df*	*t*	*p* 2-Tail	*p* 1-Tail	*d*
Active	2.09	0.90	2.24	0.75	-0.15	351	-3.66	0.0003	0.0001	0.18
Afraid	1.37	0.64	1.37	0.62	0.00	351	0.07	0.9477	0.4738	0.00
Amused	2.36	0.95	1.99	0.75	0.37	351	7.99	0.0000	0.0000	0.43
Angry	1.74	0.83	1.47	0.61	0.26	351	6.08	0.0000	0.0000	0.36
Anxious	1.76	0.81	1.83	0.84	-0.07	351	-1.98	0.0483	0.0241	0.09
Ashamed	1.29	0.53	1.33	0.59	-0.03	351	-1.06	0.2877	0.1438	0.06
In Awe	1.86	0.86	1.55	0.64	0.31	351	8.22	0.0000	0.0000	0.41
Bored	1.68	0.74	1.79	0.75	-0.11	351	-2.87	0.0043	0.0022	0.14
Calm	2.80	0.90	3.07	0.77	-0.27	351	-6.96	0.0000	0.0000	0.33
Depressed	1.55	0.82	1.52	0.77	0.03	351	0.80	0.4217	0.2108	0.03
Disgusted	1.66	0.83	1.45	0.66	0.22	351	5.36	0.0000	0.0000	0.29
Dissatisfied	1.88	0.87	1.77	0.82	0.12	351	2.55	0.0110	0.0055	0.14
At Ease	2.74	0.96	2.94	0.81	-0.19	351	-4.77	0.0000	0.0000	0.22
Enthusiastic	2.34	0.99	2.17	0.87	0.18	351	3.88	0.0001	0.0001	0.19
Envious	1.33	0.56	1.36	0.65	-0.03	351	-1.03	0.3050	0.1525	0.05
Excited	2.25	0.94	2.09	0.84	0.16	351	3.54	0.0005	0.0002	0.18
Happy	2.73	0.96	2.81	0.87	-0.08	351	-1.84	0.0668	0.0334	0.09
Hostile	1.53	0.71	1.36	0.55	0.17	351	4.76	0.0000	0.0000	0.27
Inspired	2.29	0.95	2.04	0.83	0.25	351	5.58	0.0000	0.0000	0.28
Interested	2.73	0.97	2.55	0.88	0.18	351	4.08	0.0001	0.0000	0.19
Lonely	1.57	0.87	1.66	0.90	-0.09	351	-2.61	0.0095	0.0047	0.11
Loving	2.32	1.02	2.49	0.97	-0.17	351	-3.97	0.0001	0.0000	0.17
Nervous	1.53	0.71	1.61	0.75	-0.07	351	-1.94	0.0537	0.0268	0.10
Passive	1.95	0.85	2.16	0.85	-0.21	351	-5.40	0.0000	0.0000	0.25
Peaceful	2.68	0.96	2.92	0.84	-0.23	351	-5.51	0.0000	0.0000	0.26
Proud	2.31	0.96	2.04	0.83	0.27	351	5.47	0.0000	0.0000	0.30
Relaxed	2.79	0.93	3.01	0.76	-0.22	351	-5.19	0.0000	0.0000	0.26
Sad	1.70	0.85	1.57	0.72	0.13	351	3.53	0.0005	0.0002	0.17
Satisfied	2.50	0.91	2.60	0.83	-0.10	351	-2.41	0.0164	0.0082	0.11
Sick	1.31	0.60	1.36	0.64	-0.05	351	-1.65	0.0990	0.0495	0.07
Sleepy	1.91	0.93	2.18	0.88	-0.28	351	-5.82	0.0000	0.0000	0.31
Stirred Up	2.22	0.98	1.89	0.78	0.33	351	7.60	0.0000	0.0000	0.37
Surprised	1.80	0.77	1.51	0.61	0.29	351	7.31	0.0000	0.0000	0.41
Tired	2.08	1.01	2.40	0.97	-0.32	351	-6.65	0.0000	0.0000	0.32
Unhappy	1.88	0.89	1.74	0.77	0.14	351	3.42	0.0007	0.0004	0.17
Upset	1.88	0.91	1.62	0.69	0.26	351	5.90	0.0000	0.0000	0.33

Emotion	***M*** SUF	***SD*** SUF	***M*** ESF	***SD*** ESF	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	4.69	1.21	4.86	0.89	-0.17	351	-2.81	0.0052	0.0026	0.16
Activated (Scale)	1.94	0.55	1.86	0.51	0.08	351	3.44	0.0006	0.0003	0.15
Deactivated (Scale)	2.20	0.57	2.44	0.50	-0.24	351	-8.48	0.0000	0.0000	0.44
Positive (Scale)	2.55	0.80	2.58	0.69	-0.03	351	-0.80	0.4235	0.2118	0.04
Negative (Scale)	1.71	0.73	1.60	0.65	0.11	351	3.51	0.0005	0.0003	0.16
PANAS PA (Scale)	2.35	0.79	2.21	0.70	0.14	351	4.35	0.0000	0.0000	0.19
PANAS NA (Scale)	1.52	0.57	1.46	0.55	0.07	351	2.31	0.0214	0.0107	0.12

In the table, “SUF” and “ESF” are abbreviations for status update form and experience sampling form, respectively. “Diff” is the difference between SUF and ESF averages. Two-tailed and one-tailed *p*-values are shown.

Appendix 8: Correlations between status updates and emotional experience by item or scale

	Facebook					Twitter				
Emotion	**Raw**	***p***	**Ipsat**	***p***	**Diff**	**Raw**	***p***	**Ipsat**	***p***	**Diff**
Active	0.60	0.0000	0.35	0.0000	0.26	0.59	0.0000	0.48	0.0000	0.11
Afraid	0.61	0.0000	0.40	0.0000	0.21	0.53	0.0000	0.34	0.0000	0.18
Amused	0.41	0.0000	0.15	0.0070	0.26	0.51	0.0000	0.37	0.0000	0.14
Angry	0.44	0.0000	0.16	0.0033	0.28	0.40	0.0000	0.18	0.0006	0.22
Anxious	0.56	0.0000	0.31	0.0000	0.25	0.65	0.0000	0.51	0.0000	0.14
Ashamed	0.57	0.0000	0.25	0.0000	0.32	0.43	0.0000	0.19	0.0003	0.24
In Awe	0.56	0.0000	0.25	0.0000	0.31	0.65	0.0000	0.60	0.0000	0.05
Bored	0.62	0.0000	0.53	0.0000	0.08	0.55	0.0000	0.47	0.0000	0.08
Calm	0.69	0.0000	0.52	0.0000	0.17	0.62	0.0000	0.55	0.0000	0.07
Depressed	0.68	0.0000	0.49	0.0000	0.19	0.71	0.0000	0.60	0.0000	0.11
Disgusted	0.51	0.0000	0.30	0.0000	0.21	0.50	0.0000	0.32	0.0000	0.18
Dissatisfied	0.48	0.0000	0.28	0.0000	0.21	0.48	0.0000	0.31	0.0000	0.18
At Ease	0.73	0.0000	0.62	0.0000	0.12	0.59	0.0000	0.41	0.0000	0.18
Enthusiastic	0.61	0.0000	0.34	0.0000	0.27	0.60	0.0000	0.41	0.0000	0.20
Envious	0.64	0.0000	0.38	0.0000	0.27	0.56	0.0000	0.37	0.0000	0.20
Excited	0.61	0.0000	0.31	0.0000	0.30	0.62	0.0000	0.53	0.0000	0.09
Happy	0.63	0.0000	0.41	0.0000	0.22	0.45	0.0000	0.26	0.0000	0.19
Hostile	0.60	0.0000	0.36	0.0000	0.25	0.58	0.0000	0.38	0.0000	0.20
Inspired	0.65	0.0000	0.37	0.0000	0.28	0.58	0.0000	0.44	0.0000	0.14
Interested	0.63	0.0000	0.37	0.0000	0.26	0.62	0.0000	0.46	0.0000	0.16
Lonely	0.74	0.0000	0.62	0.0000	0.12	0.70	0.0000	0.62	0.0000	0.09
Loving	0.70	0.0000	0.54	0.0000	0.17	0.67	0.0000	0.54	0.0000	0.13
Nervous	0.59	0.0000	0.34	0.0000	0.25	0.53	0.0000	0.37	0.0000	0.16
Passive	0.71	0.0000	0.56	0.0000	0.15	0.64	0.0000	0.57	0.0000	0.07
Peaceful	0.76	0.0000	0.59	0.0000	0.17	0.61	0.0000	0.54	0.0000	0.08
Proud	0.55	0.0000	0.31	0.0000	0.24	0.48	0.0000	0.31	0.0000	0.16
Relaxed	0.64	0.0000	0.49	0.0000	0.15	0.56	0.0000	0.50	0.0000	0.06
Sad	0.62	0.0000	0.45	0.0000	0.17	0.61	0.0000	0.47	0.0000	0.14
Satisfied	0.65	0.0000	0.43	0.0000	0.22	0.61	0.0000	0.53	0.0000	0.07
Sick	0.59	0.0000	0.49	0.0000	0.09	0.65	0.0000	0.55	0.0000	0.10
Sleepy	0.55	0.0000	0.43	0.0000	0.12	0.51	0.0000	0.46	0.0000	0.05
Stirred Up	0.56	0.0000	0.35	0.0000	0.20	0.59	0.0000	0.38	0.0000	0.21
Surprised	0.49	0.0000	0.15	0.0070	0.35	0.45	0.0000	0.25	0.0000	0.20
Tired	0.59	0.0000	0.47	0.0000	0.12	0.58	0.0000	0.51	0.0000	0.07
Unhappy	0.58	0.0000	0.36	0.0000	0.22	0.57	0.0000	0.43	0.0000	0.14
Upset	0.41	0.0000	0.26	0.0000	0.15	0.48	0.0000	0.36	0.0000	0.12

	Facebook					Twitter				
Emotion	**Raw**	***p***	**Ipsat**	***p***	**Diff**	**Raw**	***p***	**Ipsat**	***p***	**Diff**
Positive-Negative	0.44	0.0000	-	-	-	0.47	0.0000	-	-	-
Activated (Scale)	0.72	0.0000	0.13	0.0135	0.58	0.66	0.0000	0.21	0.0001	0.45
Deactivated (Scale)	0.69	0.0000	0.40	0.0000	0.28	0.53	0.0000	0.36	0.0000	0.18
Positive (Scale)	0.75	0.0000	0.49	0.0000	0.26	0.66	0.0000	0.52	0.0000	0.14
Negative (Scale)	0.63	0.0000	0.40	0.0000	0.23	0.62	0.0000	0.44	0.0000	0.18
PANAS PA (Scale)	0.73	0.0000	0.38	0.0000	0.35	0.66	0.0000	0.45	0.0000	0.21
PANAS NA (Scale)	0.65	0.0000	0.33	0.0000	0.32	0.55	0.0000	0.30	0.0000	0.25

The table displays correlation coefficients between status updates (SUFs) and emotional experience (ESFs) for individual emotion items and scales. The “Ipsat” columns show ipsatized correlations and “Diff” columns show the difference between raw and ipsatized correlations. In some cases, ipsatization attenuates correlations substantially. Note that the bipolar positive-negative item is not ipsatized because it has a different response scale.

Appendix 9a: Moderation regressions — Facebook

In the tables below, columns list regressions of negative emotional experience, the dependent variable, on negative emotion in status updates and moderators, the independent variables. Equation 1 includes the bolded moderator (self-monitoring and so on), Equation 2 adds a control interaction with ESFs per day, and Equation 3 adds control interactions for both ESFs and SUFs per day. A shortened 5-item PANAS negative activation scale and 6-item circumplex negative affect scale are used to assess negative emotion. All continuous (non-binary) independent variables are centered prior to entry in regressions. Standard errors are shown in parentheses.

Self-Monitoring — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.63	0.0000	0.62	0.0000	0.64	0.0000	0.61	0.0000	0.60	0.0000	0.61	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	-0.46	0.0001	-0.44	0.0002	-0.49	0.0000	-0.48	0.0004	-0.47	0.0005	-0.55	0.0001
	(0.12)		(0.12)		(0.11)		(0.13)		(0.13)		(0.13)	
SUF Scale x	-0.66	0.0232	-0.55	0.0603	-0.82	0.0060	-0.55	0.0334	-0.46	0.0744	-0.75	0.0058
Moderator	(0.29)		(0.29)		(0.30)		(0.26)		(0.26)		(0.27)	
ESFs / Day	-	-	-0.03	0.1883	-0.03	0.1818	-	-	-0.00	0.9677	0.00	0.9455
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	-0.10	0.0345	-0.09	0.0727	-	-	-0.13	0.0099	-0.11	0.0224
ESFs / Day			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	0.00	0.8527	-	-	-	-	0.02	0.5234
					(0.02)						(0.03)	
SUF Scale x	-	-	-	-	0.21	0.0002	-	-	-	-	0.19	0.0007
SUFs / Day					(0.05)						(0.05)	
Constant	1.37	0.0000	1.37	0.0000	1.37	0.0000	1.46	0.0000	1.45	0.0000	1.45	0.0000
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
R^2	0.45		0.46		0.49		0.43		0.44		0.46	
N	344		344		344		344		344		344	

Other-Directedness — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.61	0.0000	0.60	0.0000	0.60	0.0000	0.59	0.0000	0.58	0.0000	0.58	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	-0.35	0.0000	-0.34	0.0000	-0.38	0.0000	-0.40	0.0000	-0.39	0.0001	-0.44	0.0000
	(0.08)		(0.08)		(0.08)		(0.10)		(0.09)		(0.09)	
SUF Scale x	-0.52	0.0105	-0.49	0.0158	-0.69	0.0008	-0.51	0.0073	-0.47	0.0126	-0.67	0.0006
Moderator	(0.20)		(0.20)		(0.20)		(0.19)		(0.19)		(0.19)	
ESFs / Day	-	-	-0.04	0.1099	-0.04	0.0944	-	-	-0.01	0.7376	-0.01	0.7615
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	-0.11	0.0245	-0.09	0.0448	-	-	-0.13	0.0078	-0.12	0.0150
ESFs / Day			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.00	0.9845	-	-	-	-	0.01	0.6324
					(0.02)						(0.03)	
SUF Scale x	-	-	-	-	0.22	0.0001	-	-	-	-	0.19	0.0004
SUFs / Day					(0.05)						(0.05)	
Constant	1.37	0.0000	1.37	0.0000	1.36	0.0000	1.45	0.0000	1.45	0.0000	1.44	0.0000
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
R^2	0.46		0.47		0.49		0.44		0.45		0.47	
N	344		344		344		344		344		344	

Social Desirability — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.69	0.0000	0.65	0.0000	0.67	0.0000	0.62	0.0000	0.59	0.0000	0.60	0.0000
	(0.04)		(0.05)		(0.05)		(0.04)		(0.04)		(0.04)	
Moderator	-0.06	0.5855	-0.01	0.9167	-0.00	0.9794	0.07	0.5798	0.12	0.3467	0.13	0.3252
	(0.11)		(0.11)		(0.11)		(0.13)		(0.13)		(0.13)	
SUF Scale x Moderator	-0.89	0.0038	-0.68	0.0283	-0.63	0.0392	0.06	0.8282	0.16	0.5620	0.17	0.5386
	(0.30)		(0.31)		(0.31)		(0.27)		(0.27)		(0.27)	
ESFs / Day	-	-	-0.04	0.1802	-0.04	0.1473	-	-	-0.02	0.4447	-0.02	0.4481
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	-0.14	0.0081	-0.13	0.0131	-	-	-0.17	0.0007	-0.16	0.0012
			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.01	0.5394	-	-	-	-	-0.00	0.9688
					(0.02)						(0.03)	
SUF Scale x SUFs / Day	-	-	-	-	0.16	0.0025	-	-	-	-	0.13	0.0120
					(0.05)						(0.05)	
Constant	1.39	0.0000	1.38	0.0000	1.38	0.0000	1.46	0.0000	1.44	0.0000	1.44	0.0000
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
R^2	0.43		0.45		0.47		0.41		0.43		0.44	
N	330		330		330		330		330		330	

Conscientiousness (Big Five) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.55 (0.05)	0.0000	0.54 (0.05)	0.0000	0.56 (0.05)	0.0000	0.55 (0.04)	0.0000	0.54 (0.04)	0.0000	0.55 (0.04)	0.0000
Moderator	-0.11 (0.03)	0.0001	-0.11 (0.03)	0.0002	-0.10 (0.03)	0.0004	-0.13 (0.03)	0.0001	-0.13 (0.03)	0.0001	-0.13 (0.03)	0.0001
SUF Scale x Moderator	-0.19 (0.06)	0.0016	-0.18 (0.06)	0.0028	-0.16 (0.06)	0.0081	-0.14 (0.06)	0.0185	-0.13 (0.06)	0.0238	-0.12 (0.06)	0.0376
ESFs / Day	-	-	-0.04 (0.03)	0.1573	-0.04 (0.03)	0.1269	-	-	-0.00 (0.03)	0.9268	-0.00 (0.03)	0.8842
SUF Scale x ESFs / Day	-	-	-0.11 (0.05)	0.0267	-0.10 (0.05)	0.0342	-	-	-0.13 (0.05)	0.0052	-0.13 (0.05)	0.0064
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.3944	-	-	-	-	-0.01 (0.03)	0.6103
SUF Scale x SUFs / Day	-	-	-	-	0.10 (0.05)	0.0772	-	-	-	-	0.07 (0.05)	0.1737
Constant	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000
R^2	0.46		0.47		0.48		0.44		0.45		0.45	
N	344		344		344		344		344		344	

Concern for Information Privacy — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.62 (0.04)	0.0000	0.59 (0.04)	0.0000	0.60 (0.04)	0.0000	0.61 (0.04)	0.0000	0.59 (0.04)	0.0000	0.59 (0.04)	0.0000
Moderator	-0.09 (0.02)	0.0005	-0.09 (0.02)	0.0003	-0.08 (0.02)	0.0009	-0.09 (0.03)	0.0009	-0.10 (0.03)	0.0006	-0.09 (0.03)	0.0014
SUF Scale x Moderator	-0.10 (0.04)	0.0060	-0.09 (0.04)	0.0089	-0.08 (0.04)	0.0302	-0.08 (0.04)	0.0467	-0.06 (0.04)	0.0999	-0.05 (0.04)	0.1826
ESFs / Day	-	-	-0.04 (0.03)	0.1208	-0.04 (0.03)	0.1046	-	-	-0.02 (0.03)	0.5550	-0.02 (0.03)	0.5487
SUF Scale x ESFs / Day	-	-	-0.15 (0.05)	0.0020	-0.15 (0.05)	0.0029	-	-	-0.16 (0.05)	0.0012	-0.16 (0.05)	0.0016
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.4769	-	-	-	-	-0.00 (0.03)	0.8717
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.06)	0.1825	-	-	-	-	0.08 (0.05)	0.1603
Constant	1.37 (0.02)	0.0000	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000
R^2	0.47		0.49		0.49		0.44		0.46		0.46	
N	330		330		330		330		330		330	

Posting Concerns — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.71 (0.04)	0.0000	0.68 (0.04)	0.0000	0.68 (0.04)	0.0000	0.65 (0.04)	0.0000	0.63 (0.04)	0.0000	0.63 (0.04)	0.0000
Moderator	-0.02 (0.01)	0.0432	-0.03 (0.01)	0.0305	-0.03 (0.01)	0.0311	-0.02 (0.01)	0.1133	-0.02 (0.01)	0.0910	-0.02 (0.01)	0.1224
SUF Scale x Moderator	-0.10 (0.02)	0.0000	-0.10 (0.02)	0.0000	-0.09 (0.02)	0.0003	-0.06 (0.02)	0.0101	-0.05 (0.02)	0.0264	-0.04 (0.02)	0.1058
ESFs / Day	-	-	-0.04 (0.03)	0.1079	-0.05 (0.03)	0.0834	-	-	-0.02 (0.03)	0.5012	-0.02 (0.03)	0.4773
SUF Scale x ESFs / Day	-	-	-0.15 (0.05)	0.0024	-0.15 (0.05)	0.0035	-	-	-0.16 (0.05)	0.0018	-0.15 (0.05)	0.0023
SUFs / Day	-	-	-	-	-0.03 (0.02)	0.2022	-	-	-	-	-0.01 (0.03)	0.6001
SUF Scale x SUFs / Day	-	-	-	-	0.07 (0.06)	0.2025	-	-	-	-	0.09 (0.06)	0.1161
Constant	1.38 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.46		0.48		0.49		0.42		0.44		0.45	
N	330		330		330		330		330		330	

Content Impression Management — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.62	0.0000	0.60	0.0000	0.62	0.0000	0.58	0.0000	0.56	0.0000	0.57	0.0000
	(0.05)		(0.05)		(0.05)		(0.04)		(0.04)		(0.04)	
Moderator	0.08	0.0007	0.08	0.0011	0.07	0.0020	0.09	0.0009	0.09	0.0011	0.08	0.0017
	(0.02)		(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
SUF Scale x Moderator	0.03	0.5119	0.01	0.7690	0.01	0.8107	0.07	0.1530	0.05	0.2355	0.05	0.3102
	(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)	
ESFs / Day	-	-	-0.04	0.1721	-0.04	0.1431	-	-	-0.02	0.6183	-0.02	0.6146
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	-0.15	0.0033	-0.14	0.0058	-	-	-0.16	0.0013	-0.15	0.0021
			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.01	0.5764	-	-	-	-	-0.00	0.9130
					(0.02)						(0.03)	
SUF Scale x SUFs / Day	-	-	-	-	0.16	0.0033	-	-	-	-	0.12	0.0256
					(0.05)						(0.05)	
Constant	1.37	0.0000	1.37	0.0000	1.37	0.0000	1.45	0.0000	1.44	0.0000	1.44	0.0000
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
R^2	0.44		0.46		0.48		0.43		0.45		0.46	
N	330		330		330		330		330		330	

Expressive Suppression — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.70 (0.05)	0.0000	0.68 (0.05)	0.0000	0.68 (0.05)	0.0000	0.63 (0.05)	0.0000	0.62 (0.05)	0.0000	0.62 (0.05)	0.0000
Moderator	0.01 (0.02)	0.4959	0.01 (0.02)	0.5392	0.01 (0.02)	0.4514	0.02 (0.02)	0.2194	0.02 (0.02)	0.2879	0.02 (0.02)	0.2222
SUF Scale x Moderator	-0.07 (0.04)	0.0617	-0.07 (0.04)	0.0555	-0.04 (0.04)	0.2662	-0.02 (0.03)	0.5636	-0.02 (0.03)	0.5104	0.00 (0.03)	0.9166
ESFs / Day	-	-	-0.05 (0.03)	0.0896	-0.05 (0.03)	0.0796	-	-	-0.01 (0.03)	0.6833	-0.01 (0.03)	0.6928
SUF Scale x ESFs / Day	-	-	-0.12 (0.05)	0.0184	-0.11 (0.05)	0.0257	-	-	-0.14 (0.05)	0.0051	-0.13 (0.05)	0.0075
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.6561	-	-	-	-	0.00 (0.03)	0.9884
SUF Scale x SUFs / Day	-	-	-	-	0.13 (0.06)	0.0197	-	-	-	-	0.12 (0.06)	0.0373
Constant	1.38 (0.02)	0.0000	1.38 (0.02)	0.0000	1.38 (0.02)	0.0000	1.46 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.44		0.45		0.40		0.42		0.42	
N	344		344		344		344		344		344	

Depression CESD-R (Opening Questionnaire) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.55 (0.05)	0.0000	0.53 (0.05)	0.0000	0.55 (0.05)	0.0000	0.47 (0.05)	0.0000	0.46 (0.05)	0.0000	0.47 (0.05)	0.0000
Moderator	0.13 (0.03)	0.0002	0.13 (0.03)	0.0001	0.13 (0.03)	0.0001	0.22 (0.04)	0.0000	0.23 (0.04)	0.0000	0.23 (0.04)	0.0000
SUF Scale x Moderator	0.08 (0.05)	0.0959	0.09 (0.05)	0.0630	0.09 (0.05)	0.0673	0.11 (0.05)	0.0266	0.10 (0.05)	0.0544	0.11 (0.05)	0.0380
ESFs / Day	-	-	-0.05 (0.03)	0.0651	-0.05 (0.03)	0.0500	-	-	-0.02 (0.03)	0.4481	-0.02 (0.03)	0.4096
SUF Scale x ESFs / Day	-	-	-0.12 (0.05)	0.0095	-0.12 (0.05)	0.0148	-	-	-0.13 (0.05)	0.0047	-0.13 (0.05)	0.0070
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.4163	-	-	-	-	-0.02 (0.03)	0.5131
SUF Scale x SUFs / Day	-	-	-	-	0.14 (0.05)	0.0089	-	-	-	-	0.12 (0.05)	0.0204
Constant	1.37 (0.02)	0.0000	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000
R^2	0.46		0.47		0.49		0.48		0.49		0.50	
N	344		344		344		344		344		344	

Depression CESD-R (Closing Questionnaire) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.56 (0.05)	0.0000	0.51 (0.05)	0.0000	0.52 (0.05)	0.0000	0.42 (0.05)	0.0000	0.37 (0.05)	0.0000	0.37 (0.05)	0.0000
Moderator	0.20 (0.04)	0.0000	0.21 (0.04)	0.0000	0.21 (0.04)	0.0000	0.35 (0.04)	0.0000	0.36 (0.04)	0.0000	0.35 (0.04)	0.0000
SUF Scale x Moderator	-0.03 (0.05)	0.5852	0.02 (0.05)	0.7450	0.03 (0.05)	0.5106	0.03 (0.05)	0.5130	0.06 (0.05)	0.1672	0.09 (0.05)	0.0566
ESFs / Day	-	-	-0.05 (0.03)	0.0611	-0.05 (0.03)	0.0432	-	-	-0.03 (0.03)	0.3293	-0.03 (0.03)	0.2805
SUF Scale x ESFs / Day	-	-	-0.15 (0.05)	0.0023	-0.14 (0.05)	0.0030	-	-	-0.19 (0.04)	0.0000	-0.19 (0.04)	0.0000
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.4826	-	-	-	-	-0.01 (0.03)	0.6645
SUF Scale x SUFs / Day	-	-	-	-	0.16 (0.05)	0.0025	-	-	-	-	0.14 (0.05)	0.0030
Constant	1.38 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000
R^2	0.47		0.49		0.50		0.51		0.53		0.55	
N	344		344		344		344		344		344	

Neuroticism (Big Five) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.56 (0.05)	0.0000	0.55 (0.05)	0.0000	0.57 (0.05)	0.0000	0.51 (0.05)	0.0000	0.51 (0.05)	0.0000	0.52 (0.05)	0.0000
Moderator	0.11 (0.02)	0.0000	0.10 (0.02)	0.0000	0.11 (0.02)	0.0000	0.13 (0.03)	0.0000	0.13 (0.03)	0.0000	0.13 (0.03)	0.0000
SUF Scale x Moderator	0.16 (0.06)	0.0047	0.13 (0.06)	0.0176	0.15 (0.06)	0.0072	0.17 (0.05)	0.0013	0.15 (0.05)	0.0044	0.15 (0.05)	0.0036
ESFs / Day	-	-	-0.04 (0.03)	0.1594	-0.04 (0.03)	0.1261	-	-	-0.01 (0.03)	0.8500	-0.01 (0.03)	0.8125
SUF Scale x ESFs / Day	-	-	-0.09 (0.05)	0.0587	-0.08 (0.05)	0.0973	-	-	-0.12 (0.05)	0.0137	-0.11 (0.05)	0.0189
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.4030	-	-	-	-	-0.01 (0.03)	0.6121
SUF Scale x SUFs / Day	-	-	-	-	0.17 (0.05)	0.0018	-	-	-	-	0.12 (0.05)	0.0229
Constant	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.44 (0.02)	0.0000	1.43 (0.02)	0.0000	1.43 (0.02)	0.0000
R^2	0.46		0.47		0.49		0.45		0.46		0.47	
N	344		344		344		344		344		344	

Uses Full Name — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.82 (0.08)	0.0000	0.74 (0.09)	0.0000	0.73 (0.08)	0.0000	0.84 (0.08)	0.0000	0.77 (0.08)	0.0000	0.77 (0.08)	0.0000
Moderator	-0.01 (0.05)	0.8676	0.00 (0.05)	0.9700	0.00 (0.05)	0.9831	-0.01 (0.05)	0.8553	0.00 (0.05)	0.9947	-0.00 (0.05)	0.9695
SUF Scale x Moderator	-0.21 (0.10)	0.0346	-0.14 (0.10)	0.1552	-0.11 (0.10)	0.2772	-0.30 (0.09)	0.0016	-0.22 (0.10)	0.0209	-0.20 (0.10)	0.0331
ESFs / Day	-	-	-0.04 (0.03)	0.1559	-0.04 (0.03)	0.1271	-	-	-0.02 (0.03)	0.6044	-0.02 (0.03)	0.6047
SUF Scale x ESFs / Day	-	-	-0.14 (0.05)	0.0063	-0.14 (0.05)	0.0092	-	-	-0.14 (0.05)	0.0092	-0.13 (0.05)	0.0125
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.6015	-	-	-	-	-0.00 (0.03)	0.9941
SUF Scale x SUFs / Day	-	-	-	-	0.16 (0.05)	0.0030	-	-	-	-	0.12 (0.05)	0.0197
Constant	1.38 (0.04)	0.0000	1.36 (0.04)	0.0000	1.37 (0.04)	0.0000	1.46 (0.05)	0.0000	1.45 (0.05)	0.0000	1.45 (0.05)	0.0000
R^2	0.43		0.45		0.46		0.42		0.44		0.45	
N	330		330		330		330		330		330	

In Profile Picture — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.71	0.0000	0.67	0.0000	0.65	0.0000	0.72	0.0000	0.68	0.0000	0.66	0.0000
	(0.10)		(0.10)		(0.10)		(0.09)		(0.09)		(0.09)	
Moderator	0.04	0.4059	0.04	0.3951	0.04	0.3951	0.06	0.3540	0.05	0.3949	0.05	0.3532
	(0.05)		(0.05)		(0.05)		(0.06)		(0.06)		(0.06)	
SUF Scale x	-0.05	0.6650	-0.04	0.6931	0.00	0.9709	-0.12	0.2469	-0.10	0.3436	-0.06	0.5869
Moderator	(0.11)		(0.11)		(0.11)		(0.10)		(0.10)		(0.10)	
ESFs / Day	-	-	-0.04	0.1406	-0.04	0.1174	-	-	-0.02	0.5070	-0.02	0.5226
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	-0.16	0.0022	-0.15	0.0041	-	-	-0.16	0.0012	-0.16	0.0019
ESFs / Day			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.01	0.6523	-	-	-	-	0.00	0.9899
					(0.02)						(0.03)	
SUF Scale x	-	-	-	-	0.17	0.0020	-	-	-	-	0.13	0.0161
SUFs / Day					(0.05)						(0.05)	
Constant	1.34	0.0000	1.33	0.0000	1.33	0.0000	1.41	0.0000	1.41	0.0000	1.40	0.0000
	(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)	
R^2	0.42		0.44		0.46		0.41		0.43		0.44	
N	330		330		330		330		330		330	

Public Status Updates — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.66	0.0000	0.62	0.0000	0.64	0.0000	0.63	0.0000	0.60	0.0000	0.61	0.0000
	(0.05)		(0.05)		(0.05)		(0.04)		(0.04)		(0.05)	
Moderator	0.12	0.0909	0.14	0.0436	0.12	0.0849	0.14	0.0734	0.15	0.0518	0.13	0.0974
	(0.07)		(0.07)		(0.07)		(0.08)		(0.08)		(0.08)	
SUF Scale x Moderator	0.03 (0.13)	0.7925	0.09 (0.13)	0.4557	0.06 (0.13)	0.6136	0.00 (0.13)	0.9816	0.04 (0.13)	0.7551	0.01 (0.13)	0.9333
ESFs / Day	-	-	-0.05	0.0879	-0.05	0.0795	-	-	-0.03	0.4024	-0.03	0.4252
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	-0.17 (0.05)	0.0013	-0.15 (0.05)	0.0028	-	-	-0.17 (0.05)	0.0008	-0.16 (0.05)	0.0014
SUFs / Day	-	-	-	-	-0.01	0.6190	-	-	-	-	-0.00	0.9963
					(0.02)						(0.03)	
SUF Scale x SUFs / Day	-	-	-	-	0.16 (0.05)	0.0041	-	-	-	-	0.12 (0.05)	0.0235
Constant	1.36	0.0000	1.35	0.0000	1.35	0.0000	1.44	0.0000	1.43	0.0000	1.43	0.0000
	(0.02)		(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
R^2	0.43		0.45		0.47		0.41		0.43		0.44	
N	330		330		330		330		330		330	

Log of Friends — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.68 (0.04)	0.0000	0.64 (0.04)	0.0000	0.66 (0.04)	0.0000	0.64 (0.04)	0.0000	0.61 (0.04)	0.0000	0.62 (0.04)	0.0000
Moderator	0.05 (0.02)	0.0223	0.05 (0.02)	0.0187	0.04 (0.02)	0.0345	0.04 (0.02)	0.0518	0.04 (0.02)	0.0511	0.04 (0.02)	0.0740
SUF Scale x Moderator	-0.05 (0.03)	0.1246	-0.03 (0.03)	0.3088	-0.03 (0.03)	0.3401	-0.04 (0.03)	0.2559	-0.02 (0.03)	0.4791	-0.02 (0.03)	0.6350
ESFs / Day	-	-	-0.03 (0.03)	0.2480	-0.03 (0.03)	0.2091	-	-	-0.01 (0.03)	0.6904	-0.01 (0.03)	0.6830
SUF Scale x ESFs / Day	-	-	-0.16 (0.05)	0.0019	-0.15 (0.05)	0.0037	-	-	-0.17 (0.05)	0.0011	-0.16 (0.05)	0.0017
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.7129	-	-	-	-	0.00 (0.03)	0.9681
SUF Scale x SUFs / Day	-	-	-	-	0.16 (0.05)	0.0033	-	-	-	-	0.12 (0.05)	0.0230
Constant	1.38 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.45		0.47		0.41		0.43		0.44	
N	331		331		331		331		331		331	

Negative Expressivity — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.66 (0.04)	0.0000	0.64 (0.04)	0.0000	0.66 (0.04)	0.0000	0.63 (0.04)	0.0000	0.61 (0.04)	0.0000	0.62 (0.04)	0.0000
Moderator	0.03 (0.02)	0.1590	0.03 (0.02)	0.1387	0.02 (0.02)	0.1878	0.02 (0.02)	0.4280	0.02 (0.02)	0.3343	0.02 (0.02)	0.4130
SUF Scale x Moderator	0.10 (0.04)	0.0211	0.11 (0.04)	0.0099	0.10 (0.04)	0.0211	0.03 (0.04)	0.3539	0.04 (0.04)	0.2097	0.03 (0.04)	0.3588
ESFs / Day	-	-	-0.04 (0.03)	0.1116	-0.05 (0.03)	0.0907	-	-	-0.01 (0.03)	0.7670	-0.01 (0.03)	0.7478
SUF Scale x ESFs / Day	-	-	-0.13 (0.05)	0.0069	-0.12 (0.05)	0.0112	-	-	-0.15 (0.05)	0.0022	-0.15 (0.05)	0.0035
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.4919	-	-	-	-	-0.01 (0.03)	0.7563
SUF Scale x SUFs / Day	-	-	-	-	0.13 (0.05)	0.0169	-	-	-	-	0.10 (0.05)	0.0742
Constant	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.45		0.46		0.40		0.42		0.42	
N	344		344		344		344		344		344	

Venting (Brief COPE) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.65 (0.04)	0.0000	0.63 (0.04)	0.0000	0.65 (0.04)	0.0000	0.62 (0.04)	0.0000	0.60 (0.04)	0.0000	0.62 (0.04)	0.0000
Moderator	0.04 (0.03)	0.1018	0.05 (0.03)	0.0741	0.04 (0.03)	0.1044	0.04 (0.03)	0.1771	0.05 (0.03)	0.1124	0.04 (0.03)	0.1504
SUF Scale x Moderator	0.02 (0.05)	0.7117	0.04 (0.05)	0.3900	0.02 (0.05)	0.6258	0.00 (0.05)	0.9823	0.01 (0.05)	0.8091	-0.00 (0.05)	0.9463
ESFs / Day	-	-	-0.04 (0.03)	0.1423	-0.04 (0.03)	0.1209	-	-	-0.01 (0.03)	0.8455	-0.01 (0.03)	0.8344
SUF Scale x ESFs / Day	-	-	-0.13 (0.05)	0.0065	-0.12 (0.05)	0.0119	-	-	-0.15 (0.05)	0.0025	-0.14 (0.05)	0.0038
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.5403	-	-	-	-	-0.01 (0.03)	0.7724
SUF Scale x SUFs / Day	-	-	-	-	0.14 (0.06)	0.0107	-	-	-	-	0.11 (0.05)	0.0516
Constant	1.38 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.44		0.46		0.40		0.42		0.43	
N	344		344		344		344		344		344	

Emotional Support (Brief COPE) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.62 (0.04)	0.0000	0.61 (0.04)	0.0000	0.63 (0.04)	0.0000	0.61 (0.04)	0.0000	0.60 (0.04)	0.0000	0.61 (0.04)	0.0000
Moderator	0.01 (0.02)	0.7452	0.01 (0.02)	0.8089	0.01 (0.02)	0.7710	-0.00 (0.02)	0.8791	-0.00 (0.02)	0.9029	-0.00 (0.02)	0.8618
SUF Scale x Moderator	-0.19 (0.04)	0.0000	-0.19 (0.04)	0.0000	-0.19 (0.04)	0.0000	-0.17 (0.04)	0.0000	-0.16 (0.04)	0.0001	-0.17 (0.04)	0.0000
ESFs / Day	-	-	-0.04 (0.03)	0.1172	-0.04 (0.03)	0.0951	-	-	-0.01 (0.03)	0.8100	-0.01 (0.03)	0.7994
SUF Scale x ESFs / Day	-	-	-0.11 (0.05)	0.0211	-0.10 (0.05)	0.0322	-	-	-0.13 (0.05)	0.0089	-0.12 (0.05)	0.0130
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.6133	-	-	-	-	-0.00 (0.03)	0.9690
SUF Scale x SUFs / Day	-	-	-	-	0.16 (0.05)	0.0026	-	-	-	-	0.13 (0.05)	0.0101
Constant	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000
R^2	0.45		0.47		0.48		0.43		0.44		0.45	
N	344		344		344		344		344		344	

Extraversion (Big Five) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.68 (0.04)	0.0000	0.66 (0.04)	0.0000	0.68 (0.04)	0.0000	0.62 (0.04)	0.0000	0.60 (0.04)	0.0000	0.61 (0.04)	0.0000
Moderator	0.01 (0.02)	0.5755	0.01 (0.02)	0.7229	0.01 (0.02)	0.7230	-0.01 (0.03)	0.6905	-0.02 (0.03)	0.5479	-0.02 (0.03)	0.5221
SUF Scale x Moderator	0.09 (0.05)	0.0989	0.08 (0.05)	0.1549	0.06 (0.05)	0.2590	-0.01 (0.05)	0.8994	-0.03 (0.05)	0.5742	-0.04 (0.05)	0.4021
ESFs / Day	-	-	-0.04 (0.03)	0.1350	-0.04 (0.03)	0.1120	-	-	-0.01 (0.03)	0.6840	-0.01 (0.03)	0.6547
SUF Scale x ESFs / Day	-	-	-0.12 (0.05)	0.0180	-0.11 (0.05)	0.0250	-	-	-0.15 (0.05)	0.0033	-0.14 (0.05)	0.0041
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.6217	-	-	-	-	-0.00 (0.03)	0.8856
SUF Scale x SUFs / Day	-	-	-	-	0.15 (0.05)	0.0083	-	-	-	-	0.12 (0.05)	0.0286
Constant	1.38 (0.02)	0.0000	1.38 (0.02)	0.0000	1.38 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.44		0.45		0.40		0.42		0.42	
N	344		344		344		344		344		344	

Satisfaction with Life (Opening Questionnaire) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.63 (0.04)	0.0000	0.62 (0.04)	0.0000	0.64 (0.04)	0.0000	0.58 (0.05)	0.0000	0.57 (0.05)	0.0000	0.59 (0.05)	0.0000
Moderator	-0.02 (0.01)	0.2214	-0.02 (0.01)	0.2430	-0.02 (0.01)	0.2506	-0.05 (0.02)	0.0049	-0.05 (0.02)	0.0058	-0.05 (0.02)	0.0050
SUF Scale x Moderator	-0.07 (0.03)	0.0543	-0.05 (0.03)	0.1231	-0.04 (0.04)	0.2780	-0.03 (0.03)	0.4004	-0.02 (0.03)	0.6076	-0.01 (0.03)	0.7408
ESFs / Day	-	-	-0.04 (0.03)	0.1171	-0.04 (0.03)	0.0954	-	-	-0.01 (0.03)	0.7226	-0.01 (0.03)	0.6824
SUF Scale x ESFs / Day	-	-	-0.11 (0.05)	0.0285	-0.10 (0.05)	0.0347	-	-	-0.13 (0.05)	0.0062	-0.13 (0.05)	0.0079
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.5422	-	-	-	-	-0.01 (0.03)	0.6019
SUF Scale x SUFs / Day	-	-	-	-	0.14 (0.06)	0.0113	-	-	-	-	0.11 (0.05)	0.0368
Constant	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.03)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.44		0.45		0.41		0.43		0.44	
N	344		344		344		344		344		344	

Satisfaction with Life (Closing Questionnaire) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.63 (0.04)	0.0000	0.61 (0.04)	0.0000	0.63 (0.05)	0.0000	0.57 (0.05)	0.0000	0.56 (0.05)	0.0000	0.57 (0.05)	0.0000
Moderator	-0.02 (0.01)	0.1856	-0.02 (0.01)	0.1366	-0.02 (0.01)	0.1449	-0.05 (0.02)	0.0037	-0.05 (0.02)	0.0028	-0.05 (0.02)	0.0026
SUF Scale x Moderator	-0.07 (0.04)	0.0603	-0.08 (0.04)	0.0296	-0.06 (0.04)	0.1264	-0.03 (0.03)	0.3339	-0.03 (0.03)	0.2795	-0.02 (0.03)	0.4434
ESFs / Day	-	-	-0.05 (0.03)	0.0914	-0.05 (0.03)	0.0796	-	-	-0.01 (0.03)	0.6797	-0.01 (0.03)	0.6455
SUF Scale x ESFs / Day	-	-	-0.13 (0.05)	0.0082	-0.12 (0.05)	0.0135	-	-	-0.15 (0.05)	0.0029	-0.14 (0.05)	0.0042
SUFs / Day	-	-	-	-	-0.02 (0.02)	0.5259	-	-	-	-	-0.02 (0.03)	0.5668
SUF Scale x SUFs / Day	-	-	-	-	0.13 (0.06)	0.0218	-	-	-	-	0.10 (0.05)	0.0501
Constant	1.37 (0.02)	0.0000	1.36 (0.02)	0.0000	1.37 (0.02)	0.0000	1.45 (0.03)	0.0000	1.45 (0.03)	0.0000	1.45 (0.03)	0.0000
R^2	0.43		0.45		0.46		0.42		0.43		0.44	
N	344		344		344		344		344		344	

Openness (Big Five) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.65 (0.04)	0.0000	0.64 (0.04)	0.0000	0.66 (0.04)	0.0000	0.64 (0.04)	0.0000	0.63 (0.04)	0.0000	0.64 (0.04)	0.0000
Moderator	-0.07 (0.03)	0.0270	-0.07 (0.03)	0.0207	-0.07 (0.03)	0.0204	-0.07 (0.03)	0.0328	-0.07 (0.03)	0.0302	-0.07 (0.03)	0.0294
SUF Scale x Moderator	-0.09 (0.06)	0.1403	-0.10 (0.06)	0.0945	-0.09 (0.06)	0.1220	-0.12 (0.06)	0.0471	-0.13 (0.06)	0.0262	-0.13 (0.06)	0.0231
ESFs / Day	-	-	-0.04 (0.03)	0.0946	-0.05 (0.03)	0.0777	-	-	-0.01 (0.03)	0.7149	-0.01 (0.03)	0.6989
SUF Scale x ESFs / Day	-	-	-0.13 (0.05)	0.0100	-0.12 (0.05)	0.0155	-	-	-0.15 (0.05)	0.0022	-0.15 (0.05)	0.0030
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.6516	-	-	-	-	-0.00 (0.03)	0.8680
SUF Scale x SUFs / Day	-	-	-	-	0.15 (0.05)	0.0066	-	-	-	-	0.11 (0.05)	0.0298
Constant	1.38 (0.02)	0.0000	1.37 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.46 (0.02)	0.0000	1.46 (0.02)	0.0000
R^2	0.43		0.45		0.46		0.41		0.43		0.44	
N	344		344		344		344		344		344	

Female — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.76	0.0000	0.73	0.0000	0.73	0.0000	0.72	0.0000	0.69	0.0000	0.70	0.0000
	(0.06)		(0.06)		(0.06)		(0.06)		(0.06)		(0.06)	
Moderator	-0.05	0.2859	-0.04	0.3880	-0.03	0.4715	-0.06	0.2319	-0.05	0.3425	-0.05	0.3510
	(0.04)		(0.04)		(0.04)		(0.05)		(0.05)		(0.05)	
SUF Scale x	-0.22	0.0090	-0.19	0.0289	-0.16	0.0576	-0.18	0.0331	-0.14	0.0998	-0.14	0.1063
Moderator	(0.08)		(0.08)		(0.08)		(0.08)		(0.08)		(0.08)	
ESFs / Day	-	-	-0.03	0.2184	-0.04	0.1769	-	-	0.00	0.9308	0.00	0.9461
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	-0.10	0.0418	-0.10	0.0516	-	-	-0.12	0.0131	-0.12	0.0165
ESFs / Day			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.01	0.5811	-	-	-	-	-0.00	0.9196
					(0.02)						(0.03)	
SUF Scale x	-	-	-	-	0.14	0.0129	-	-	-	-	0.11	0.0388
SUFs / Day					(0.05)						(0.05)	
Constant	1.40	0.0000	1.39	0.0000	1.39	0.0000	1.49	0.0000	1.48	0.0000	1.48	0.0000
	(0.03)		(0.03)		(0.03)		(0.04)		(0.04)		(0.04)	
R^2	0.44		0.45		0.46		0.41		0.42		0.43	
N	342		342		342		342		342		342	

Age — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.65 (0.05)	0.0000	0.64 (0.05)	0.0000	0.64 (0.05)	0.0000	0.61 (0.04)	0.0000	0.60 (0.04)	0.0000	0.61 (0.04)	0.0000
Moderator	-0.01 (0.00)	0.0076	-0.01 (0.00)	0.0095	-0.01 (0.00)	0.0085	-0.01 (0.00)	0.0077	-0.01 (0.00)	0.0086	-0.01 (0.00)	0.0072
SUF Scale x Moderator	0.00 (0.01)	0.8085	0.00 (0.01)	0.7587	-0.00 (0.01)	0.8904	-0.00 (0.00)	0.7965	-0.00 (0.00)	0.8233	-0.00 (0.00)	0.5472
ESFs / Day	-	-	-0.04 (0.03)	0.1202	-0.04 (0.03)	0.1067	-	-	-0.01 (0.03)	0.7866	-0.01 (0.03)	0.7940
SUF Scale x ESFs / Day	-	-	-0.12 (0.05)	0.0159	-0.11 (0.05)	0.0235	-	-	-0.14 (0.05)	0.0043	-0.13 (0.05)	0.0059
SUFs / Day	-	-	-	-	-0.00 (0.02)	0.9277	-	-	-	-	0.01 (0.03)	0.8331
SUF Scale x SUFs / Day	-	-	-	-	0.15 (0.05)	0.0061	-	-	-	-	0.12 (0.05)	0.0281
Constant	1.38 (0.02)	0.0000	1.38 (0.02)	0.0000	1.37 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000
R^2	0.43		0.45		0.46		0.41		0.43		0.43	
N	344		344		344		344		344		344	

SUFs Per Day — Facebook

	ESF PANAS NA Scale				ESF CIRCUM NA Scale			
	1		2		1		2	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.68	0.0000	0.66	0.0000	0.64	0.0000	0.62	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	-0.01	0.6825	-0.01	0.6248	-0.01	0.8399	-0.01	0.8460
	(0.02)		(0.02)		(0.03)		(0.03)	
SUF Scale x Moderator	0.16	0.0043	0.15	0.0054	0.12	0.0266	0.11	0.0358
	(0.05)		(0.05)		(0.05)		(0.05)	
ESFs / Day	-	-	-0.04	0.0986	-	-	-0.01	0.7425
			(0.03)				(0.03)	
SUF Scale x ESFs / Day	-	-	-0.11	0.0203	-	-	-0.14	0.0054
			(0.05)				(0.05)	
Constant	1.38	0.0000	1.37	0.0000	1.46	0.0000	1.45	0.0000
	(0.02)		(0.02)		(0.02)		(0.02)	
R^2	0.44		0.45		0.41		0.42	
N	344		344		344		344	

Agreeableness (Big Five) — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.58 (0.05)	0.0000	0.58 (0.05)	0.0000	0.60 (0.05)	0.0000	0.54 (0.05)	0.0000	0.54 (0.05)	0.0000	0.55 (0.05)	0.0000
Moderator	-0.05 (0.03)	0.0661	-0.05 (0.03)	0.1089	-0.04 (0.03)	0.1377	-0.07 (0.03)	0.0391	-0.06 (0.03)	0.0579	-0.06 (0.03)	0.0689
SUF Scale x Moderator	-0.15 (0.06)	0.0191	-0.13 (0.06)	0.0405	-0.11 (0.06)	0.0785	-0.21 (0.06)	0.0002	-0.19 (0.06)	0.0012	-0.18 (0.06)	0.0018
ESFs / Day	-	-	-0.04 (0.03)	0.1522	-0.04 (0.03)	0.1241	-	-	-0.00 (0.03)	0.9280	-0.00 (0.03)	0.8999
SUF Scale x ESFs / Day	-	-	-0.11 (0.05)	0.0295	-0.10 (0.05)	0.0386	-	-	-0.11 (0.05)	0.0292	-0.10 (0.05)	0.0341
SUFs / Day	-	-	-	-	-0.01 (0.02)	0.6146	-	-	-	-	-0.01 (0.03)	0.8023
SUF Scale x SUFs / Day	-	-	-	-	0.14 (0.05)	0.0121	-	-	-	-	0.10 (0.05)	0.0684
Constant	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.36 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000
R^2	0.44		0.45		0.46		0.43		0.44		0.44	
N	344		344		344		344		344		344	

Income — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.66	0.0000	0.64	0.0000	0.66	0.0000	0.64	0.0000	0.63	0.0000	0.64	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	-0.01	0.7336	-0.01	0.6834	-0.00	0.8265	-0.01	0.5489	-0.01	0.5441	-0.01	0.6638
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
SUF Scale x Moderator	0.08	0.0055	0.08	0.0052	0.09	0.0036	0.11	0.0008	0.10	0.0015	0.10	0.0015
	(0.03)		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)	
ESFs / Day	-	-	-0.04	0.1080	-0.05	0.0911	-	-	-0.01	0.7166	-0.01	0.7184
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	-0.12	0.0142	-0.11	0.0214	-	-	-0.13	0.0078	-0.13	0.0103
			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.01	0.7286	-	-	-	-	0.00	0.9788
					(0.02)						(0.03)	
SUF Scale x SUFs / Day	-	-	-	-	0.16	0.0036	-	-	-	-	0.11	0.0363
					(0.05)						(0.05)	
Constant	1.38	0.0000	1.38	0.0000	1.37	0.0000	1.47	0.0000	1.46	0.0000	1.46	0.0000
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
R^2	0.43		0.45		0.46		0.42		0.43		0.44	
N	344		344		344		344		344		344	

College Degree Holder — Facebook

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.42	0.0000	0.43	0.0000	0.42	0.0000	0.44	0.0000	0.45	0.0000	0.45	0.0000
	(0.07)		(0.07)		(0.06)		(0.06)		(0.06)		(0.06)	
Moderator	0.04	0.3031	0.04	0.3343	0.05	0.1944	0.04	0.3989	0.03	0.4950	0.04	0.3481
	(0.04)		(0.04)		(0.04)		(0.05)		(0.05)		(0.05)	
SUF Scale x Moderator	0.39	0.0000	0.36	0.0000	0.41	0.0000	0.33	0.0001	0.28	0.0009	0.31	0.0003
	(0.08)		(0.08)		(0.08)		(0.08)		(0.08)		(0.08)	
ESFs / Day	-	-	-0.04	0.1407	-0.04	0.1193	-	-	-0.00	0.8912	-0.00	0.9009
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	-0.09	0.0693	-0.07	0.1299	-	-	-0.10	0.0438	-0.09	0.0711
			(0.05)		(0.05)				(0.05)		(0.05)	
SUFs / Day	-	-	-	-	-0.00	0.9420	-	-	-	-	0.00	0.8626
					(0.02)						(0.03)	
SUF Scale x SUFs / Day	-	-	-	-	0.20	0.0002	-	-	-	-	0.14	0.0087
					(0.05)						(0.05)	
Constant	1.35	0.0000	1.35	0.0000	1.34	0.0000	1.44	0.0000	1.44	0.0000	1.43	0.0000
	(0.03)		(0.03)		(0.03)		(0.04)		(0.04)		(0.04)	
R^2	0.46		0.47		0.49		0.43		0.43		0.45	
N	344		344		344		344		344		344	

Appendix 9b: Moderation regressions — Twitter

In the tables below, columns list regressions of negative emotional experience, the dependent variable, on negative emotion in status updates and moderators, the independent variables. Equation 1 includes the bolded moderator (self-monitoring and so on), Equation 2 adds a control interaction with ESFs per day, and Equation 3 adds control interactions for both ESFs and SUFs per day. A shortened 5-item PANAS negative activation scale and 6-item circumplex negative affect scale are used to assess negative emotion. All continuous (non-binary) independent variables are centered prior to entry in regressions. Standard errors are shown in parentheses.

Self-Monitoring — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.52	0.0000	0.52	0.0000	0.50	0.0000	0.55	0.0000	0.55	0.0000	0.52	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	-0.17	0.2248	-0.17	0.2316	-0.20	0.1430	-0.12	0.4281	-0.13	0.4207	-0.18	0.2343
	(0.14)		(0.14)		(0.14)		(0.16)		(0.16)		(0.15)	
SUF Scale x Moderator	0.06	0.8239	0.04	0.8875	-0.07	0.7820	0.25	0.2768	0.23	0.3198	0.06	0.7786
	(0.27)		(0.27)		(0.26)		(0.23)		(0.23)		(0.23)	
ESFs / Day	-	-	-0.02	0.3774	-0.03	0.3090	-	-	-0.01	0.7215	-0.01	0.6793
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	0.04	0.3849	0.03	0.5637	-	-	0.04	0.3268	0.06	0.1445
			(0.05)		(0.04)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.2311	-	-	-	-	0.01	0.5820
					(0.01)						(0.01)	
SUF Scale x SUFs / Day	-	-	-	-	0.08	0.0000	-	-	-	-	0.06	0.0000
					(0.01)						(0.01)	
Constant	1.46	0.0000	1.46	0.0000	1.45	0.0000	1.60	0.0000	1.60	0.0000	1.59	0.0000
	(0.02)		(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
R^2	0.31		0.31		0.37		0.38		0.39		0.42	
N	352		352		352		352		352		352	

Other-Directedness — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.51 (0.04)	0.0000	0.51 (0.04)	0.0000	0.48 (0.04)	0.0000	0.55 (0.04)	0.0000	0.55 (0.04)	0.0000	0.51 (0.04)	0.0000
Moderator	-0.23 (0.10)	0.0249	-0.23 (0.10)	0.0248	-0.24 (0.10)	0.0173	-0.26 (0.12)	0.0242	-0.27 (0.12)	0.0220	-0.27 (0.11)	0.0156
SUF Scale x Moderator	-0.13 (0.19)	0.4926	-0.15 (0.19)	0.4268	-0.23 (0.19)	0.2237	0.11 (0.17)	0.5167	0.09 (0.17)	0.6144	0.03 (0.16)	0.8643
ESFs / Day	-	-	-0.02 (0.03)	0.3808	-0.03 (0.03)	0.3096	-	-	-0.01 (0.03)	0.7340	-0.01 (0.03)	0.6898
SUF Scale x ESFs / Day	-	-	0.05 (0.05)	0.3199	0.03 (0.04)	0.4674	-	-	0.04 (0.04)	0.2915	0.06 (0.04)	0.1302
SUFs / Day	-	-	-	-	0.01 (0.01)	0.2512	-	-	-	-	0.01 (0.01)	0.5965
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.60 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.31		0.32		0.38		0.39		0.39		0.43	
N	352		352		352		352		352		352	

Social Desirability — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.58	0.0000	0.57	0.0000	0.54	0.0000	0.58	0.0000	0.58	0.0000	0.54	0.0000
	(0.05)		(0.05)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	0.35	0.0255	0.35	0.0288	0.37	0.0152	0.31	0.0741	0.32	0.0726	0.35	0.0423
	(0.16)		(0.16)		(0.15)		(0.17)		(0.18)		(0.17)	
SUF Scale x	-0.08	0.7687	-0.09	0.7357	0.30	0.2850	-0.31	0.1896	-0.30	0.1995	-0.15	0.5221
Moderator	(0.28)		(0.28)		(0.28)		(0.23)		(0.24)		(0.23)	
ESFs / Day	-	-	-0.03	0.3092	-0.03	0.2376	-	-	-0.02	0.5127	-0.03	0.4267
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	-0.01	0.8906	-0.02	0.6820	-	-	0.03	0.5012	0.05	0.2370
ESFs / Day			(0.05)		(0.05)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.2526	-	-	-	-	0.01	0.5886
					(0.01)						(0.01)	
SUF Scale x	-	-	-	-	0.09	0.0000	-	-	-	-	0.05	0.0001
SUFs / Day					(0.02)						(0.01)	
Constant	1.47	0.0000	1.47	0.0000	1.46	0.0000	1.61	0.0000	1.62	0.0000	1.61	0.0000
	(0.03)		(0.03)		(0.02)		(0.03)		(0.03)		(0.03)	
R^2	0.34		0.35		0.41		0.42		0.42		0.45	
N	322		322		322		322		322		322	

Conscientiousness (Big Five) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.52	0.0000	0.53	0.0000	0.51	0.0000	0.54	0.0000	0.55	0.0000	0.52	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	-0.09	0.0096	-0.09	0.0120	-0.10	0.0032	-0.08	0.0480	-0.08	0.0472	-0.08	0.0290
	(0.03)		(0.03)		(0.03)		(0.04)		(0.04)		(0.04)	
SUF Scale x Moderator	-0.07	0.2253	-0.08	0.1945	-0.13	0.0179	0.01	0.8470	-0.00	0.9981	-0.01	0.8387
	(0.06)		(0.06)		(0.06)		(0.05)		(0.05)		(0.05)	
ESFs / Day	-	-	-0.01	0.6274	-0.01	0.5797	-	-	-0.00	0.9289	-0.00	0.9010
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	0.05	0.2805	0.04	0.3864	-	-	0.04	0.2693	0.06	0.1180
			(0.05)		(0.04)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.2516	-	-	-	-	0.01	0.6231
					(0.01)						(0.01)	
SUF Scale x SUFs / Day	-	-	-	-	0.09	0.0000	-	-	-	-	0.06	0.0000
					(0.01)						(0.01)	
Constant	1.45	0.0000	1.46	0.0000	1.45	0.0000	1.60	0.0000	1.60	0.0000	1.59	0.0000
	(0.02)		(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
R^2	0.32		0.32		0.39		0.39		0.39		0.43	
N	352		352		352		352		352		352	

Concern for Information Privacy — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.58 (0.05)	0.0000	0.58 (0.05)	0.0000	0.55 (0.05)	0.0000	0.58 (0.04)	0.0000	0.58 (0.04)	0.0000	0.55 (0.04)	0.0000
Moderator	-0.01 (0.03)	0.7271	-0.01 (0.03)	0.7917	-0.01 (0.03)	0.6598	-0.01 (0.04)	0.8168	-0.01 (0.04)	0.8472	-0.01 (0.04)	0.8098
SUF Scale x Moderator	0.09 (0.07)	0.1779	0.09 (0.07)	0.1816	0.05 (0.07)	0.4824	0.13 (0.06)	0.0237	0.13 (0.06)	0.0236	0.10 (0.06)	0.0850
ESFs / Day	-	-	-0.03 (0.03)	0.2854	-0.04 (0.03)	0.2231	-	-	-0.02 (0.03)	0.4836	-0.03 (0.03)	0.4032
SUF Scale x ESFs / Day	-	-	-0.00 (0.05)	0.9651	-0.02 (0.05)	0.6593	-	-	0.03 (0.04)	0.5260	0.05 (0.04)	0.2789
SUFs / Day	-	-	-	-	0.01 (0.01)	0.2703	-	-	-	-	0.01 (0.01)	0.6311
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.02)	0.0000	-	-	-	-	0.05 (0.01)	0.0003
Constant	1.46 (0.03)	0.0000	1.46 (0.03)	0.0000	1.46 (0.02)	0.0000	1.60 (0.03)	0.0000	1.61 (0.03)	0.0000	1.60 (0.03)	0.0000
R^2	0.34		0.34		0.40		0.42		0.42		0.45	
N	322		322		322		322		322		322	

Posting Concerns — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.59 (0.05)	0.0000	0.58 (0.05)	0.0000	0.53 (0.05)	0.0000	0.58 (0.04)	0.0000	0.58 (0.04)	0.0000	0.54 (0.04)	0.0000
Moderator	0.01 (0.02)	0.6427	0.01 (0.02)	0.6094	0.03 (0.02)	0.0918	-0.00 (0.02)	0.8611	-0.00 (0.02)	0.8962	0.01 (0.02)	0.5742
SUF Scale x Moderator	-0.05 (0.03)	0.1146	-0.05 (0.03)	0.1181	0.05 (0.03)	0.1275	-0.02 (0.03)	0.5502	-0.02 (0.03)	0.4996	0.04 (0.03)	0.1705
ESFs / Day	-	-	-0.03 (0.03)	0.2727	-0.04 (0.03)	0.1811	-	-	-0.02 (0.03)	0.5111	-0.03 (0.03)	0.4130
SUF Scale x ESFs / Day	-	-	-0.00 (0.05)	0.9387	-0.03 (0.05)	0.4864	-	-	0.03 (0.04)	0.4610	0.05 (0.04)	0.2753
SUFs / Day	-	-	-	-	0.01 (0.01)	0.1530	-	-	-	-	0.01 (0.01)	0.5413
SUF Scale x SUFs / Day	-	-	-	-	0.10 (0.02)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.47 (0.03)	0.0000	1.47 (0.03)	0.0000	1.45 (0.02)	0.0000	1.61 (0.03)	0.0000	1.61 (0.03)	0.0000	1.60 (0.03)	0.0000
R^2	0.34		0.34		0.41		0.41		0.41		0.45	
N	322		322		322		322		322		322	

Content Impression Management — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.59 (0.05)	0.0000	0.59 (0.05)	0.0000	0.54 (0.05)	0.0000	0.58 (0.04)	0.0000	0.58 (0.04)	0.0000	0.53 (0.04)	0.0000
Moderator	0.03 (0.03)	0.3103	0.03 (0.03)	0.3315	0.05 (0.03)	0.0911	0.02 (0.03)	0.5369	0.02 (0.03)	0.5521	0.04 (0.03)	0.2405
SUF Scale x Moderator	-0.11 (0.05)	0.0396	-0.11 (0.05)	0.0371	0.01 (0.06)	0.8512	-0.03 (0.05)	0.5201	-0.03 (0.05)	0.5492	0.05 (0.05)	0.3494
ESFs / Day	-	-	-0.03 (0.03)	0.3034	-0.04 (0.03)	0.2263	-	-	-0.02 (0.03)	0.5419	-0.03 (0.03)	0.4133
SUF Scale x ESFs / Day	-	-	-0.02 (0.05)	0.7217	-0.02 (0.05)	0.6201	-	-	0.03 (0.04)	0.5232	0.05 (0.04)	0.2125
SUFs / Day	-	-	-	-	0.01 (0.01)	0.2390	-	-	-	-	0.01 (0.01)	0.5711
SUF Scale x SUFs / Day	-	-	-	-	0.09 (0.02)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.47 (0.03)	0.0000	1.47 (0.03)	0.0000	1.46 (0.02)	0.0000	1.61 (0.03)	0.0000	1.61 (0.03)	0.0000	1.60 (0.03)	0.0000
R^2	0.34		0.35		0.40		0.41		0.41		0.45	
N	322		322		322		322		322		322	

Expressive Suppression — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.52	0.0000	0.52	0.0000	0.50	0.0000	0.54	0.0000	0.55	0.0000	0.52	0.0000
	(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)	
Moderator	0.03	0.1137	0.03	0.1189	0.03	0.1146	0.04	0.0868	0.04	0.0922	0.04	0.1081
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
SUF Scale x	-0.01	0.8784	-0.00	0.9100	-0.00	0.9171	0.01	0.7315	0.01	0.7724	0.01	0.7690
Moderator	(0.04)		(0.04)		(0.04)		(0.03)		(0.03)		(0.03)	
ESFs / Day	-	-	-0.02	0.3756	-0.03	0.3214	-	-	-0.01	0.7143	-0.01	0.6852
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	0.04	0.3830	0.02	0.5775	-	-	0.04	0.3160	0.05	0.1593
ESFs / Day			(0.05)		(0.04)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.1980	-	-	-	-	0.01	0.5023
					(0.01)						(0.01)	
SUF Scale x	-	-	-	-	0.08	0.0000	-	-	-	-	0.05	0.0000
SUFs / Day					(0.01)						(0.01)	
Constant	1.46	0.0000	1.46	0.0000	1.45	0.0000	1.60	0.0000	1.60	0.0000	1.59	0.0000
	(0.02)		(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
R^2	0.31		0.31		0.37		0.39		0.39		0.43	
N	352		352		352		352		352		352	

Depression CESD-R (Opening Questionnaire) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.43 (0.04)	0.0000	0.43 (0.04)	0.0000	0.41 (0.04)	0.0000	0.43 (0.04)	0.0000	0.44 (0.04)	0.0000	0.41 (0.04)	0.0000
Moderator	0.17 (0.03)	0.0000	0.17 (0.03)	0.0000	0.16 (0.03)	0.0000	0.19 (0.04)	0.0000	0.19 (0.04)	0.0000	0.19 (0.04)	0.0000
SUF Scale x Moderator	0.15 (0.05)	0.0029	0.16 (0.05)	0.0013	0.17 (0.05)	0.0005	0.10 (0.04)	0.0189	0.11 (0.04)	0.0101	0.11 (0.04)	0.0099
ESFs / Day	-	-	-0.01 (0.03)	0.5773	-0.02 (0.03)	0.4527	-	-	-0.00 (0.03)	0.8765	-0.01 (0.03)	0.8125
SUF Scale x ESFs / Day	-	-	0.07 (0.04)	0.1062	0.06 (0.04)	0.1725	-	-	0.06 (0.04)	0.1162	0.07 (0.04)	0.0438
SUFs / Day	-	-	-	-	0.01 (0.01)	0.4117	-	-	-	-	0.00 (0.01)	0.7332
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.43 (0.02)	0.0000	1.58 (0.03)	0.0000	1.58 (0.03)	0.0000	1.57 (0.03)	0.0000
R^2	0.37		0.38		0.44		0.44		0.44		0.48	
N	352		352		352		352		352		352	

Depression CESD-R (Closing Questionnaire) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.38 (0.05)	0.0000	0.38 (0.05)	0.0000	0.37 (0.04)	0.0000	0.36 (0.04)	0.0000	0.36 (0.04)	0.0000	0.35 (0.04)	0.0000
Moderator	0.23 (0.03)	0.0000	0.23 (0.03)	0.0000	0.22 (0.03)	0.0000	0.29 (0.04)	0.0000	0.28 (0.04)	0.0000	0.28 (0.04)	0.0000
SUF Scale x Moderator	0.09 (0.04)	0.0282	0.10 (0.04)	0.0184	0.08 (0.04)	0.0430	0.09 (0.04)	0.0215	0.10 (0.04)	0.0124	0.07 (0.04)	0.0557
ESFs / Day	-	-	-0.01 (0.03)	0.6192	-0.02 (0.03)	0.4912	-	-	-0.00 (0.03)	0.9350	-0.00 (0.03)	0.8786
SUF Scale x ESFs / Day	-	-	0.06 (0.04)	0.1795	0.04 (0.04)	0.3056	-	-	0.06 (0.04)	0.1219	0.07 (0.04)	0.0623
SUFs / Day	-	-	-	-	0.01 (0.01)	0.5235	-	-	-	-	0.00 (0.01)	0.8427
SUF Scale x SUFs / Day	-	-	-	-	0.07 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.57 (0.03)	0.0000	1.58 (0.03)	0.0000	1.57 (0.03)	0.0000
R^2	0.40		0.41		0.45		0.48		0.48		0.51	
N	352		352		352		352		352		352	

Neuroticism (Big Five) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.46 (0.04)	0.0000	0.46 (0.04)	0.0000	0.45 (0.04)	0.0000	0.47 (0.04)	0.0000	0.47 (0.04)	0.0000	0.46 (0.04)	0.0000
Moderator	0.13 (0.03)	0.0000	0.13 (0.03)	0.0000	0.11 (0.03)	0.0002	0.14 (0.03)	0.0000	0.14 (0.03)	0.0000	0.13 (0.03)	0.0001
SUF Scale x Moderator	0.16 (0.05)	0.0034	0.16 (0.05)	0.0030	0.12 (0.05)	0.0176	0.11 (0.04)	0.0114	0.12 (0.05)	0.0077	0.08 (0.05)	0.0842
ESFs / Day	-	-	-0.02 (0.03)	0.4438	-0.03 (0.03)	0.3480	-	-	-0.01 (0.03)	0.8032	-0.01 (0.03)	0.7457
SUF Scale x ESFs / Day	-	-	0.04 (0.05)	0.3396	0.03 (0.04)	0.4990	-	-	0.05 (0.04)	0.1683	0.06 (0.04)	0.1025
SUFs / Day	-	-	-	-	0.01 (0.01)	0.4840	-	-	-	-	0.00 (0.01)	0.7956
SUF Scale x SUFs / Day	-	-	-	-	0.07 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0002
Constant	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.44 (0.02)	0.0000	1.58 (0.03)	0.0000	1.58 (0.03)	0.0000	1.58 (0.03)	0.0000
R^2	0.35		0.35		0.40		0.42		0.42		0.45	
N	352		352		352		352		352		352	

Uses Full Name — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.65	0.0000	0.64	0.0000	0.57	0.0000	0.60	0.0000	0.60	0.0000	0.54	0.0000
	(0.06)		(0.06)		(0.06)		(0.05)		(0.05)		(0.05)	
Moderator	0.01	0.8837	0.01	0.7932	0.03	0.5326	0.06	0.3442	0.06	0.3241	0.07	0.2372
	(0.05)		(0.05)		(0.05)		(0.06)		(0.06)		(0.06)	
SUF Scale x Moderator	-0.16	0.0936	-0.16	0.1071	-0.05	0.5864	-0.04	0.6274	-0.05	0.5153	0.01	0.8907
	(0.09)		(0.10)		(0.10)		(0.08)		(0.08)		(0.08)	
ESFs / Day	-	-	-0.03	0.2911	-0.04	0.1953	-	-	-0.03	0.4585	-0.03	0.3527
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x ESFs / Day	-	-	0.01	0.8475	-0.02	0.6987	-	-	0.04	0.4165	0.05	0.2935
			(0.05)		(0.05)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.2657	-	-	-	-	0.01	0.5788
					(0.01)						(0.01)	
SUF Scale x SUFs / Day	-	-	-	-	0.08	0.0000	-	-	-	-	0.05	0.0001
					(0.02)						(0.01)	
Constant	1.46	0.0000	1.46	0.0000	1.45	0.0000	1.59	0.0000	1.59	0.0000	1.58	0.0000
	(0.03)		(0.03)		(0.03)		(0.04)		(0.04)		(0.04)	
R^2	0.34		0.34		0.40		0.41		0.41		0.44	
N	322		322		322		322		322		322	

In Profile Picture — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.58	0.0000	0.58	0.0000	0.52	0.0000	0.55	0.0000	0.55	0.0000	0.48	0.0000
	(0.07)		(0.07)		(0.07)		(0.06)		(0.06)		(0.06)	
Moderator	0.11	0.0561	0.11	0.0513	0.11	0.0360	0.09	0.1285	0.09	0.1315	0.10	0.1016
	(0.06)		(0.06)		(0.05)		(0.06)		(0.06)		(0.06)	
SUF Scale x	0.03	0.7691	0.02	0.8048	0.09	0.3008	0.08	0.3213	0.08	0.3265	0.13	0.0860
Moderator	(0.09)		(0.09)		(0.09)		(0.08)		(0.08)		(0.08)	
ESFs / Day	-	-	-0.03	0.2661	-0.04	0.1999	-	-	-0.02	0.5031	-0.03	0.3880
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	-0.01	0.8215	-0.03	0.5899	-	-	0.03	0.5436	0.05	0.2704
ESFs / Day			(0.05)		(0.05)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.2193	-	-	-	-	0.01	0.5971
					(0.01)						(0.01)	
SUF Scale x	-	-	-	-	0.08	0.0000	-	-	-	-	0.05	0.0000
SUFs / Day					(0.02)						(0.01)	
Constant	1.39	0.0000	1.39	0.0000	1.38	0.0000	1.55	0.0000	1.55	0.0000	1.54	0.0000
	(0.05)		(0.05)		(0.04)		(0.05)		(0.05)		(0.05)	
R^2	0.34		0.34		0.41		0.42		0.42		0.45	
N	322		322		322		322		322		322	

Public Status Updates — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.53 (0.10)	0.0000	0.52 (0.10)	0.0000	0.45 (0.10)	0.0000	0.43 (0.10)	0.0001	0.42 (0.11)	0.0001	0.39 (0.10)	0.0002
Moderator	0.10 (0.07)	0.1432	0.10 (0.07)	0.1612	0.10 (0.07)	0.1563	0.09 (0.08)	0.2197	0.09 (0.08)	0.2345	0.09 (0.08)	0.2360
SUF Scale x Moderator	0.08 (0.11)	0.4947	0.07 (0.12)	0.5307	0.13 (0.11)	0.2376	0.18 (0.11)	0.1113	0.19 (0.11)	0.0926	0.19 (0.11)	0.0910
ESFs / Day	-	-	-0.03 (0.03)	0.3324	-0.04 (0.03)	0.2283	-	-	-0.02 (0.03)	0.5317	-0.03 (0.03)	0.4044
SUF Scale x ESFs / Day	-	-	-0.00 (0.05)	0.9424	-0.01 (0.05)	0.7743	-	-	0.04 (0.04)	0.3871	0.06 (0.04)	0.1787
SUFs / Day	-	-	-	-	0.01 (0.01)	0.3618	-	-	-	-	0.00 (0.01)	0.7508
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.02)	0.0000	-	-	-	-	0.05 (0.01)	0.0001
Constant	1.38 (0.06)	0.0000	1.38 (0.06)	0.0000	1.38 (0.06)	0.0000	1.53 (0.07)	0.0000	1.54 (0.07)	0.0000	1.53 (0.07)	0.0000
R^2	0.34		0.34		0.41		0.42		0.42		0.45	
N	322		322		322		322		322		322	

Log of Followers — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.58 (0.05)	0.0000	0.58 (0.05)	0.0000	0.55 (0.05)	0.0000	0.58 (0.04)	0.0000	0.58 (0.04)	0.0000	0.55 (0.04)	0.0000
Moderator	0.03 (0.02)	0.0781	0.03 (0.02)	0.1067	0.02 (0.02)	0.2194	0.05 (0.02)	0.0275	0.04 (0.02)	0.0340	0.04 (0.02)	0.0591
SUF Scale x Moderator	-0.00 (0.03)	0.9646	-0.00 (0.03)	0.9423	-0.04 (0.03)	0.2421	0.04 (0.03)	0.2092	0.04 (0.03)	0.1760	0.01 (0.03)	0.6306
ESFs / Day	-	-	-0.02 (0.03)	0.4326	-0.03 (0.03)	0.2729	-	-	-0.01 (0.03)	0.7518	-0.02 (0.03)	0.5539
SUF Scale x ESFs / Day	-	-	-0.01 (0.05)	0.7877	-0.03 (0.05)	0.4967	-	-	0.03 (0.04)	0.4268	0.05 (0.04)	0.2456
SUFs / Day	-	-	-	-	0.01 (0.01)	0.4272	-	-	-	-	-0.00 (0.01)	0.9789
SUF Scale x SUFs / Day	-	-	-	-	0.09 (0.02)	0.0000	-	-	-	-	0.05 (0.01)	0.0002
Constant	1.46 (0.03)	0.0000	1.46 (0.03)	0.0000	1.46 (0.02)	0.0000	1.61 (0.03)	0.0000	1.61 (0.03)	0.0000	1.60 (0.03)	0.0000
R^2	0.34		0.34		0.40		0.42		0.42		0.45	
N	322		322		322		322		322		322	

Negative Expressivity — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.53 (0.04)	0.0000	0.53 (0.04)	0.0000	0.51 (0.04)	0.0000	0.55 (0.04)	0.0000	0.55 (0.04)	0.0000	0.52 (0.04)	0.0000
Moderator	0.03 (0.02)	0.1951	0.03 (0.02)	0.2094	0.03 (0.02)	0.1888	0.02 (0.02)	0.3700	0.02 (0.02)	0.3991	0.02 (0.02)	0.3174
SUF Scale x Moderator	0.07 (0.04)	0.0448	0.07 (0.04)	0.0523	0.09 (0.04)	0.0119	0.05 (0.03)	0.0847	0.05 (0.03)	0.0971	0.06 (0.03)	0.0556
ESFs / Day	-	-	-0.03 (0.03)	0.3392	-0.03 (0.03)	0.2658	-	-	-0.01 (0.03)	0.6704	-0.01 (0.03)	0.6298
SUF Scale x ESFs / Day	-	-	0.03 (0.05)	0.5780	0.01 (0.04)	0.8790	-	-	0.03 (0.04)	0.3808	0.05 (0.04)	0.2046
SUFs / Day	-	-	-	-	0.01 (0.01)	0.2376	-	-	-	-	0.01 (0.01)	0.5252
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.60 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.31		0.32		0.38		0.39		0.39		0.43	
N	352		352		352		352		352		352	

Venting (Brief COPE) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.55 (0.04)	0.0000	0.55 (0.04)	0.0000	0.52 (0.04)	0.0000	0.54 (0.04)	0.0000	0.55 (0.04)	0.0000	0.52 (0.04)	0.0000
Moderator	0.07 (0.03)	0.0234	0.07 (0.03)	0.0287	0.06 (0.03)	0.0398	0.04 (0.03)	0.2200	0.04 (0.03)	0.2372	0.04 (0.03)	0.2357
SUF Scale x Moderator	0.15 (0.05)	0.0042	0.15 (0.05)	0.0041	0.12 (0.05)	0.0277	0.05 (0.05)	0.3220	0.05 (0.05)	0.2472	0.02 (0.05)	0.7138
ESFs / Day	-	-	-0.02 (0.03)	0.4030	-0.03 (0.03)	0.3320	-	-	-0.01 (0.03)	0.7503	-0.01 (0.03)	0.7037
SUF Scale x ESFs / Day	-	-	0.04 (0.05)	0.4268	0.02 (0.04)	0.6041	-	-	0.05 (0.04)	0.2219	0.06 (0.04)	0.1315
SUFs / Day	-	-	-	-	0.01 (0.01)	0.3407	-	-	-	-	0.01 (0.01)	0.6119
SUF Scale x SUFs / Day	-	-	-	-	0.07 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.59 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.33		0.33		0.38		0.39		0.39		0.42	
N	352		352		352		352		352		352	

Emotional Support (Brief COPE) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.51 (0.04)	0.0000	0.51 (0.04)	0.0000	0.48 (0.04)	0.0000	0.54 (0.04)	0.0000	0.54 (0.04)	0.0000	0.52 (0.04)	0.0000
Moderator	-0.04 (0.03)	0.1254	-0.04 (0.03)	0.1321	-0.03 (0.02)	0.2732	-0.03 (0.03)	0.3022	-0.03 (0.03)	0.2759	-0.02 (0.03)	0.4914
SUF Scale x Moderator	-0.11 (0.04)	0.0087	-0.10 (0.04)	0.0108	-0.11 (0.04)	0.0042	-0.03 (0.04)	0.3534	-0.03 (0.04)	0.3452	-0.01 (0.03)	0.7049
ESFs / Day	-	-	-0.02 (0.03)	0.4464	-0.03 (0.03)	0.3514	-	-	-0.01 (0.03)	0.7870	-0.01 (0.03)	0.7164
SUF Scale x ESFs / Day	-	-	0.04 (0.05)	0.4464	0.02 (0.04)	0.6758	-	-	0.05 (0.04)	0.2445	0.06 (0.04)	0.1291
SUFs / Day	-	-	-	-	0.01 (0.01)	0.2965	-	-	-	-	0.01 (0.01)	0.5561
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.60 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.32		0.32		0.38		0.39		0.39		0.42	
N	352		352		352		352		352		352	

Extraversion (Big Five) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.52 (0.04)	0.0000	0.52 (0.04)	0.0000	0.50 (0.04)	0.0000	0.53 (0.04)	0.0000	0.53 (0.04)	0.0000	0.51 (0.04)	0.0000
Moderator	-0.06 (0.03)	0.0246	-0.06 (0.03)	0.0235	-0.05 (0.03)	0.0521	-0.06 (0.03)	0.0298	-0.07 (0.03)	0.0276	-0.05 (0.03)	0.0812
SUF Scale x Moderator	-0.16 (0.05)	0.0009	-0.16 (0.05)	0.0009	-0.15 (0.05)	0.0012	-0.11 (0.04)	0.0102	-0.11 (0.04)	0.0102	-0.07 (0.04)	0.0743
ESFs / Day	-	-	-0.03 (0.03)	0.3070	-0.03 (0.03)	0.2478	-	-	-0.01 (0.03)	0.6592	-0.01 (0.03)	0.6295
SUF Scale x ESFs / Day	-	-	0.04 (0.05)	0.3941	0.02 (0.04)	0.5754	-	-	0.04 (0.04)	0.2558	0.06 (0.04)	0.1362
SUFs / Day	-	-	-	-	0.01 (0.01)	0.3352	-	-	-	-	0.01 (0.01)	0.6513
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0001
Constant	1.46 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.59 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.33		0.34		0.39		0.40		0.40		0.43	
N	352		352		352		352		352		352	

Satisfaction with Life (Opening Questionnaire) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.49 (0.04)	0.0000	0.49 (0.04)	0.0000	0.47 (0.04)	0.0000	0.49 (0.04)	0.0000	0.49 (0.04)	0.0000	0.46 (0.04)	0.0000
Moderator	-0.06 (0.02)	0.0018	-0.06 (0.02)	0.0015	-0.06 (0.02)	0.0017	-0.08 (0.02)	0.0002	-0.08 (0.02)	0.0001	-0.08 (0.02)	0.0001
SUF Scale x Moderator	-0.06 (0.03)	0.0346	-0.07 (0.03)	0.0199	-0.07 (0.03)	0.0111	-0.04 (0.03)	0.1062	-0.05 (0.03)	0.0630	-0.04 (0.03)	0.0811
ESFs / Day	-	-	-0.01 (0.03)	0.6302	-0.02 (0.03)	0.5195	-	-	-0.00 (0.03)	0.9791	-0.00 (0.03)	0.9062
SUF Scale x ESFs / Day	-	-	0.07 (0.05)	0.1139	0.06 (0.04)	0.1863	-	-	0.06 (0.04)	0.0999	0.08 (0.04)	0.0381
SUFs / Day	-	-	-	-	0.01 (0.01)	0.3669	-	-	-	-	0.00 (0.01)	0.7861
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.59 (0.03)	0.0000	1.59 (0.03)	0.0000	1.58 (0.03)	0.0000
R^2	0.33		0.34		0.40		0.41		0.42		0.45	
N	352		352		352		352		352		352	

Satisfaction with Life (Closing Questionnaire) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.46 (0.04)	0.0000	0.46 (0.04)	0.0000	0.45 (0.04)	0.0000	0.45 (0.04)	0.0000	0.45 (0.04)	0.0000	0.44 (0.04)	0.0000
Moderator	-0.06 (0.02)	0.0002	-0.07 (0.02)	0.0002	-0.06 (0.02)	0.0003	-0.09 (0.02)	0.0000	-0.10 (0.02)	0.0000	-0.10 (0.02)	0.0000
SUF Scale x Moderator	-0.06 (0.03)	0.0357	-0.06 (0.03)	0.0274	-0.05 (0.03)	0.0452	-0.05 (0.02)	0.0517	-0.05 (0.02)	0.0250	-0.04 (0.02)	0.0984
ESFs / Day	-	-	-0.02 (0.03)	0.5610	-0.02 (0.03)	0.4397	-	-	-0.00 (0.03)	0.9080	-0.01 (0.03)	0.7950
SUF Scale x ESFs / Day	-	-	0.07 (0.05)	0.1291	0.05 (0.04)	0.2313	-	-	0.08 (0.04)	0.0474	0.09 (0.04)	0.0212
SUFs / Day	-	-	-	-	0.01 (0.01)	0.4184	-	-	-	-	0.00 (0.01)	0.8649
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.58 (0.03)	0.0000	1.58 (0.03)	0.0000	1.58 (0.03)	0.0000
R^2	0.34		0.34		0.40		0.43		0.43		0.47	
N	352		352		352		352		352		352	

Openness (Big Five) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.49 (0.04)	0.0000	0.49 (0.04)	0.0000	0.48 (0.04)	0.0000	0.53 (0.04)	0.0000	0.53 (0.04)	0.0000	0.51 (0.04)	0.0000
Moderator	-0.06 (0.04)	0.1134	-0.06 (0.04)	0.0982	-0.05 (0.04)	0.1569	-0.05 (0.04)	0.1962	-0.06 (0.04)	0.1749	-0.04 (0.04)	0.3156
SUF Scale x Moderator	-0.15 (0.06)	0.0130	-0.15 (0.06)	0.0142	-0.12 (0.06)	0.0493	-0.13 (0.05)	0.0139	-0.13 (0.05)	0.0129	-0.10 (0.05)	0.0626
ESFs / Day	-	-	-0.03 (0.03)	0.3415	-0.03 (0.03)	0.2947	-	-	-0.01 (0.03)	0.7124	-0.01 (0.03)	0.6762
SUF Scale x ESFs / Day	-	-	0.04 (0.05)	0.3507	0.03 (0.04)	0.5289	-	-	0.05 (0.04)	0.2170	0.06 (0.04)	0.1163
SUFs / Day	-	-	-	-	0.01 (0.01)	0.2280	-	-	-	-	0.01 (0.01)	0.6031
SUF Scale x SUFs / Day	-	-	-	-	0.07 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0001
Constant	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.59 (0.03)	0.0000	1.59 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.32		0.32		0.38		0.40		0.40		0.43	
N	352		352		352		352		352		352	

Female — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.55 (0.07)	0.0000	0.57 (0.07)	0.0000	0.53 (0.07)	0.0000	0.56 (0.06)	0.0000	0.59 (0.07)	0.0000	0.53 (0.07)	0.0000
Moderator	-0.12 (0.05)	0.0288	-0.12 (0.05)	0.0195	-0.13 (0.05)	0.0139	-0.13 (0.06)	0.0275	-0.15 (0.06)	0.0162	-0.14 (0.06)	0.0201
SUF Scale x Moderator	-0.06 (0.09)	0.4719	-0.10 (0.09)	0.2720	-0.05 (0.09)	0.5258	-0.04 (0.08)	0.6499	-0.07 (0.08)	0.3958	-0.01 (0.08)	0.8849
ESFs / Day	-	-	-0.03 (0.03)	0.2806	-0.03 (0.03)	0.2387	-	-	-0.00 (0.03)	0.8764	-0.01 (0.03)	0.6979
SUF Scale x ESFs / Day	-	-	0.09 (0.05)	0.0700	0.06 (0.05)	0.2131	-	-	0.07 (0.04)	0.0831	0.06 (0.04)	0.1761
SUFs / Day	-	-	-	-	0.02 (0.01)	0.0575	-	-	-	-	0.01 (0.01)	0.2616
SUF Scale x SUFs / Day	-	-	-	-	0.07 (0.02)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.53 (0.04)	0.0000	1.54 (0.04)	0.0000	1.54 (0.04)	0.0000	1.69 (0.05)	0.0000	1.70 (0.05)	0.0000	1.68 (0.05)	0.0000
R^2	0.32		0.33		0.38		0.38		0.39		0.43	
N	340		340		340		340		340		340	

Age — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.53 (0.04)	0.0000	0.53 (0.04)	0.0000	0.51 (0.04)	0.0000	0.55 (0.04)	0.0000	0.55 (0.04)	0.0000	0.52 (0.04)	0.0000
Moderator	-0.00 (0.00)	0.4940	-0.00 (0.00)	0.4662	-0.00 (0.00)	0.3196	0.00 (0.00)	0.9991	-0.00 (0.00)	0.9485	-0.00 (0.00)	0.8978
SUF Scale x Moderator	-0.00 (0.00)	0.8111	-0.00 (0.00)	0.8574	-0.01 (0.00)	0.0879	0.00 (0.00)	0.3069	0.00 (0.00)	0.3094	0.00 (0.00)	0.7570
ESFs / Day	-	-	-0.03 (0.03)	0.3623	-0.03 (0.03)	0.3210	-	-	-0.01 (0.03)	0.6649	-0.01 (0.03)	0.6643
SUF Scale x ESFs / Day	-	-	0.04 (0.05)	0.3636	0.02 (0.04)	0.5961	-	-	0.04 (0.04)	0.2976	0.06 (0.04)	0.1433
SUFs / Day	-	-	-	-	0.01 (0.01)	0.1881	-	-	-	-	0.01 (0.01)	0.5192
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.02)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.46 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.60 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.30		0.31		0.37		0.38		0.39		0.42	
N	352		352		352		352		352		352	

SUFs Per Day — Twitter

	ESF PANAS NA Scale				ESF CIRCUM NA Scale			
	1		2		1		2	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.51 (0.04)	0.0000	0.50 (0.04)	0.0000	0.52 (0.04)	0.0000	0.52 (0.04)	0.0000
Moderator	0.01 (0.01)	0.1508	0.01 (0.01)	0.2119	0.01 (0.01)	0.4599	0.01 (0.01)	0.5289
SUF Scale x Moderator	0.08 (0.01)	0.0000	0.08 (0.01)	0.0000	0.05 (0.01)	0.0000	0.05 (0.01)	0.0000
ESFs / Day	-	-	-0.03 (0.03)	0.3111	-	-	-0.01 (0.03)	0.6764
SUF Scale x ESFs / Day	-	-	0.03 (0.04)	0.5576	-	-	0.06 (0.04)	0.1398
SUFs / Day	-	-	-	-	-	-	-	-
SUF Scale x SUFs / Day	-	-	-	-	-	-	-	-
Constant	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.58 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.36		0.37		0.42		0.42	
N	352		352		352		352	

Agreeableness (Big Five) — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.50 (0.04)	0.0000	0.51 (0.04)	0.0000	0.49 (0.04)	0.0000	0.52 (0.04)	0.0000	0.53 (0.04)	0.0000	0.50 (0.04)	0.0000
Moderator	-0.15 (0.04)	0.0001	-0.15 (0.04)	0.0001	-0.14 (0.03)	0.0001	-0.13 (0.04)	0.0019	-0.13 (0.04)	0.0018	-0.13 (0.04)	0.0019
SUF Scale x Moderator	-0.20 (0.06)	0.0006	-0.20 (0.06)	0.0006	-0.21 (0.06)	0.0001	-0.08 (0.05)	0.1163	-0.09 (0.05)	0.0828	-0.09 (0.05)	0.0865
ESFs / Day	-	-	-0.01 (0.03)	0.5885	-0.02 (0.03)	0.5136	-	-	-0.00 (0.03)	0.8929	-0.01 (0.03)	0.8671
SUF Scale x ESFs / Day	-	-	0.05 (0.04)	0.2379	0.04 (0.04)	0.3815	-	-	0.05 (0.04)	0.1668	0.07 (0.04)	0.0758
SUFs / Day	-	-	-	-	0.01 (0.01)	0.1928	-	-	-	-	0.01 (0.01)	0.4600
SUF Scale x SUFs / Day	-	-	-	-	0.08 (0.01)	0.0000	-	-	-	-	0.05 (0.01)	0.0000
Constant	1.45 (0.02)	0.0000	1.45 (0.02)	0.0000	1.44 (0.02)	0.0000	1.59 (0.03)	0.0000	1.60 (0.03)	0.0000	1.58 (0.03)	0.0000
R^2	0.36		0.36		0.42		0.40		0.41		0.44	
N	352		352		352		352		352		352	

Income — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.55 (0.04)	0.0000	0.56 (0.04)	0.0000	0.55 (0.04)	0.0000	0.55 (0.04)	0.0000	0.55 (0.04)	0.0000	0.52 (0.04)	0.0000
Moderator	-0.02 (0.02)	0.3977	-0.02 (0.02)	0.3631	-0.02 (0.02)	0.3167	-0.02 (0.02)	0.3544	-0.02 (0.02)	0.3141	-0.02 (0.02)	0.2820
SUF Scale x Moderator	-0.09 (0.03)	0.0074	-0.08 (0.03)	0.0083	-0.13 (0.03)	0.0000	-0.04 (0.03)	0.1701	-0.04 (0.03)	0.1608	-0.05 (0.03)	0.0709
ESFs / Day	-	-	-0.02 (0.03)	0.4501	-0.02 (0.03)	0.4060	-	-	-0.01 (0.03)	0.7673	-0.01 (0.03)	0.7482
SUF Scale x ESFs / Day	-	-	0.05 (0.05)	0.3051	0.03 (0.04)	0.4767	-	-	0.05 (0.04)	0.2296	0.06 (0.04)	0.0989
SUFs / Day	-	-	-	-	0.01 (0.01)	0.1820	-	-	-	-	0.01 (0.01)	0.5262
SUF Scale x SUFs / Day	-	-	-	-	0.09 (0.01)	0.0000	-	-	-	-	0.06 (0.01)	0.0000
Constant	1.46 (0.02)	0.0000	1.46 (0.02)	0.0000	1.45 (0.02)	0.0000	1.60 (0.03)	0.0000	1.60 (0.03)	0.0000	1.59 (0.03)	0.0000
R^2	0.32		0.32		0.40		0.39		0.39		0.43	
N	350		350		350		350		350		350	

College Degree Holder — Twitter

	ESF PANAS Negative Activation Scale						ESF Circumplex Negative Affect Scale					
	1		2		3		1		2		3	
	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*	Est.	*p*
SUF Scale	0.52	0.0000	0.53	0.0000	0.57	0.0000	0.55	0.0000	0.57	0.0000	0.55	0.0000
	(0.06)		(0.06)		(0.06)		(0.05)		(0.06)		(0.05)	
Moderator	0.01	0.8060	0.01	0.8216	-0.01	0.8568	0.00	0.9791	-0.00	0.9760	-0.01	0.8686
	(0.05)		(0.05)		(0.05)		(0.06)		(0.06)		(0.05)	
SUF Scale x	0.01	0.9239	-0.01	0.9034	-0.12	0.1682	-0.01	0.8813	-0.03	0.6739	-0.06	0.4578
Moderator	(0.09)		(0.09)		(0.09)		(0.08)		(0.08)		(0.08)	
ESFs / Day	-	-	-0.03	0.3696	-0.03	0.3585	-	-	-0.01	0.7279	-0.01	0.7081
			(0.03)		(0.03)				(0.03)		(0.03)	
SUF Scale x	-	-	0.04	0.3812	0.05	0.3226	-	-	0.05	0.2557	0.06	0.1046
ESFs / Day			(0.05)		(0.05)				(0.04)		(0.04)	
SUFs / Day	-	-	-	-	0.01	0.1936	-	-	-	-	0.01	0.5301
					(0.01)						(0.01)	
SUF Scale x	-	-	-	-	0.08	0.0000	-	-	-	-	0.06	0.0000
SUFs / Day					(0.02)						(0.01)	
Constant	1.45	0.0000	1.45	0.0000	1.45	0.0000	1.60	0.0000	1.60	0.0000	1.59	0.0000
	(0.04)		(0.04)		(0.03)		(0.04)		(0.04)		(0.04)	
R^2	0.30		0.31		0.37		0.38		0.38		0.42	
N	352		352		352		352		352		352	

Appendix 10a: Correlations for LIWC positive and negative outputs — Facebook

	Individual SUFs (N = 3,973)				SUFs in Range (N = 344)				ESFs in Range (N = 344)			
Emotion	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***
Active	-0.01	0.5834	-0.10	0.0000	0.00	0.9321	-0.08	0.1522	-0.07	0.1746	-0.06	0.2528
Amused	0.09	0.0000	-0.06	0.0001	0.16	0.0036	-0.04	0.4302	0.01	0.8183	-0.08	0.1472
In Awe	0.04	0.0120	-0.05	0.0010	0.08	0.1401	-0.07	0.2253	0.02	0.6727	-0.04	0.5020
Calm	0.06	0.0002	-0.09	0.0000	0.05	0.3262	-0.07	0.2055	0.04	0.4142	-0.04	0.4696
At Ease	0.05	0.0014	-0.11	0.0000	0.11	0.0493	-0.04	0.4202	0.06	0.2982	-0.04	0.4389
Enthusiastic	0.05	0.0018	-0.09	0.0000	0.05	0.3816	-0.10	0.0549	-0.04	0.5170	-0.09	0.1004
Excited	0.04	0.0080	-0.09	0.0000	0.15	0.0066	-0.10	0.0584	0.00	0.9730	-0.06	0.2407
Happy	0.07	0.0000	-0.15	0.0000	0.13	0.0180	-0.12	0.0269	0.07	0.2204	-0.09	0.0956
Inspired	0.04	0.0090	-0.10	0.0000	0.07	0.1712	-0.14	0.0081	0.01	0.9150	-0.07	0.1869
Interested	0.06	0.0004	-0.09	0.0000	0.03	0.5799	-0.06	0.2497	-0.05	0.3301	-0.09	0.1171
Loving	0.06	0.0005	-0.07	0.0000	0.14	0.0079	-0.01	0.8637	0.04	0.4112	-0.08	0.1253
Peaceful	0.06	0.0004	-0.11	0.0000	0.06	0.2698	-0.09	0.0981	0.05	0.4039	-0.05	0.3483
Proud	0.04	0.0263	-0.12	0.0000	0.13	0.0158	0.01	0.8250	-0.05	0.3931	-0.07	0.1690
Relaxed	0.06	0.0001	-0.11	0.0000	0.07	0.1676	-0.14	0.0109	0.11	0.0468	-0.03	0.5704
Satisfied	0.08	0.0000	-0.13	0.0000	0.03	0.6107	-0.10	0.0661	0.05	0.3394	-0.04	0.4796
Afraid	-0.05	0.0035	0.10	0.0000	0.02	0.7206	0.02	0.7252	-0.01	0.9223	0.02	0.7283
Angry	-0.07	0.0000	0.14	0.0000	-0.01	0.8330	0.07	0.1774	0.01	0.8483	0.01	0.9159
Anxious	-0.06	0.0004	0.06	0.0001	-0.09	0.0995	-0.02	0.7355	-0.02	0.7669	0.01	0.9041
Ashamed	-0.04	0.0055	0.10	0.0000	0.05	0.3978	0.02	0.7342	0.01	0.9147	-0.01	0.8358
Bored	0.01	0.4418	0.06	0.0000	0.08	0.1652	0.00	0.9717	0.06	0.2433	0.01	0.7856
Depressed	-0.05	0.0010	0.09	0.0000	-0.03	0.6157	0.02	0.6733	-0.01	0.7991	0.03	0.5512
Disgusted	-0.06	0.0001	0.13	0.0000	0.01	0.8308	0.11	0.0418	0.02	0.7548	0.06	0.2553
Dissatisfied	-0.10	0.0000	0.16	0.0000	-0.08	0.1276	0.08	0.1610	-0.03	0.6414	-0.02	0.6796
Envious	0.00	0.9373	0.02	0.1946	0.03	0.6424	-0.04	0.4962	0.02	0.7503	-0.03	0.5398
Hostile	-0.06	0.0003	0.10	0.0000	-0.06	0.3005	0.11	0.0436	0.01	0.8583	0.04	0.4700
Lonely	-0.05	0.0032	0.06	0.0001	-0.03	0.6115	-0.04	0.4823	-0.04	0.4440	-0.04	0.4199
Nervous	-0.05	0.0028	0.06	0.0005	-0.04	0.4661	-0.01	0.8590	-0.01	0.8497	-0.02	0.6474
Sad	-0.08	0.0000	0.14	0.0000	-0.05	0.3604	0.12	0.0272	0.00	0.9841	0.05	0.3139
Sick	-0.02	0.1670	0.09	0.0000	0.00	0.9421	0.01	0.8503	-0.07	0.1853	0.03	0.6025
Tired	-0.03	0.0492	0.06	0.0002	-0.03	0.5712	-0.03	0.5721	0.03	0.5744	0.06	0.2832
Unhappy	-0.09	0.0000	0.15	0.0000	-0.11	0.0399	0.10	0.0697	-0.03	0.5574	0.01	0.7875
Upset	-0.10	0.0000	0.17	0.0000	-0.14	0.0083	0.16	0.0038	-0.04	0.4879	0.02	0.7011
Passive	0.02	0.1218	-0.01	0.6001	0.02	0.6606	-0.02	0.7451	0.03	0.5335	0.03	0.6425
Sleepy	-0.02	0.1905	0.03	0.1067	-0.03	0.6137	0.00	0.9538	0.02	0.7203	-0.01	0.8730
Stirred Up	-0.06	0.0004	0.07	0.0000	-0.06	0.2654	0.05	0.3447	-0.06	0.2865	-0.02	0.7500
Surprised	-0.01	0.5255	0.02	0.2526	-0.02	0.6862	0.02	0.6606	-0.01	0.8229	-0.02	0.6912

	Individual SUFs (N = 3,973)				SUFs in Range (N = 344)				ESFs in Range (N = 344)			
Emotion	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***
Positive-Negative	0.12	0.0000	-0.21	0.0000	0.21	0.0001	-0.15	0.0041	0.05	0.3533	-0.09	0.0817
Positive (Scale)	0.07	0.0000	-0.15	0.0000	0.10	0.0697	-0.09	0.1050	0.03	0.6148	-0.07	0.1685
Negative (Scale)	-0.09	0.0000	0.17	0.0000	-0.08	0.1378	0.10	0.0690	-0.02	0.6942	0.02	0.7006
PANAS PA (Scale)	0.04	0.0051	-0.13	0.0000	0.07	0.2169	-0.09	0.1059	-0.05	0.3887	-0.09	0.1028
PANAS NA (Scale)	-0.08	0.0000	0.14	0.0000	-0.05	0.3740	0.07	0.1679	-0.01	0.8538	0.01	0.8871

The table above shows correlations between LIWC outputs for positive ("Pos") and negative ("Neg") emotion, on the one hand, and positive and negative unipolar items and scales ("Emotion"), on the other. Correlations are shown for individual SUFs, SUFs in the circumscribed date ranges, and ESFs in the circumscribed date ranges. The first negative item and first "pure" arousal item are highlighted.

Scales from Opening and Closing Questionnaires

Scale (Questionnaire)	**Pos**	***p***	**Neg**	***p***
PANAS PA (Opening)	-0.04	0.5190	-0.06	0.2464
PANAS NA (Opening)	-0.07	0.2274	-0.03	0.6308
Life Satisfaction (Opening)	0.09	0.0881	0.00	0.9847
Life Satisfaction (Closing)	0.10	0.0635	0.01	0.8106
Depression (Opening)	-0.06	0.2771	0.03	0.6327
Depression (Closing)	-0.05	0.3667	0.02	0.7497
Extraversion (Opening)	0.01	0.8333	-0.03	0.5810
Neuroticism (Opening)	-0.07	0.1929	0.03	0.6204

The table above shows correlations between LIWC outputs for positive ("Pos") and negative ("Neg") emotion using SUFs in the circumscribed date ranges, on the one hand, and scales from the opening and closing questionnaires, on the other.

Appendix 10b: Correlations for LIWC positive and negative outputs — Twitter

	Individual SUFs (N = 3,776)				SUFs in Range (N = 352)				ESFs in Range (N = 352)			
Emotion	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***
Active	0.01	0.3826	-0.07	0.0001	-0.03	0.5619	0.04	0.4991	-0.03	0.6292	-0.01	0.8227
Amused	0.04	0.0084	-0.08	0.0000	0.06	0.2493	-0.03	0.6068	-0.09	0.0817	-0.02	0.7420
In Awe	0.07	0.0001	-0.03	0.0989	-0.02	0.7754	-0.07	0.1836	-0.06	0.2508	-0.02	0.6430
Calm	0.07	0.0000	-0.11	0.0000	0.11	0.0319	-0.13	0.0168	0.13	0.0118	-0.11	0.0449
At Ease	0.07	0.0001	-0.11	0.0000	0.16	0.0025	-0.15	0.0039	0.13	0.0121	-0.11	0.0337
Enthusiastic	0.07	0.0000	-0.12	0.0000	0.04	0.4291	-0.17	0.0019	-0.08	0.1389	-0.05	0.3665
Excited	0.07	0.0000	-0.10	0.0000	0.10	0.0607	-0.13	0.0146	-0.06	0.2712	-0.06	0.2396
Happy	0.10	0.0000	-0.14	0.0000	0.19	0.0004	-0.25	0.0000	0.08	0.1135	-0.06	0.2890
Inspired	0.05	0.0013	-0.10	0.0000	0.06	0.2921	-0.10	0.0748	-0.07	0.2000	-0.05	0.3434
Interested	0.05	0.0017	-0.08	0.0000	-0.04	0.4471	-0.08	0.1496	-0.09	0.0851	-0.03	0.5506
Loving	0.09	0.0000	-0.09	0.0000	0.07	0.1611	-0.11	0.0317	-0.02	0.7004	-0.01	0.8543
Peaceful	0.07	0.0000	-0.12	0.0000	0.15	0.0040	-0.18	0.0006	0.08	0.1480	-0.07	0.2190
Proud	0.07	0.0001	-0.11	0.0000	0.04	0.5085	-0.20	0.0002	0.04	0.4987	-0.04	0.4603
Relaxed	0.07	0.0000	-0.11	0.0000	0.11	0.0407	-0.17	0.0011	0.10	0.0529	-0.10	0.0622
Satisfied	0.08	0.0000	-0.13	0.0000	0.20	0.0001	-0.21	0.0001	0.05	0.3449	-0.11	0.0477
Afraid	-0.03	0.0805	0.07	0.0000	-0.04	0.4324	0.17	0.0010	-0.11	0.0412	0.07	0.1859
Angry	-0.08	0.0000	0.15	0.0000	-0.09	0.0794	0.16	0.0023	-0.04	0.4469	0.04	0.5000
Anxious	-0.03	0.1121	0.08	0.0000	-0.10	0.0556	0.18	0.0005	-0.12	0.0228	0.08	0.1464
Ashamed	0.00	0.8217	0.06	0.0007	-0.02	0.6437	0.16	0.0035	-0.09	0.0879	0.04	0.4437
Bored	-0.04	0.0190	0.03	0.0863	-0.05	0.3066	0.06	0.3039	-0.02	0.7623	0.03	0.5786
Depressed	-0.04	0.0128	0.11	0.0000	-0.08	0.1520	0.14	0.0073	-0.09	0.0910	0.06	0.2357
Disgusted	-0.05	0.0016	0.13	0.0000	-0.08	0.1171	0.15	0.0048	-0.10	0.0719	0.05	0.3302
Dissatisfied	-0.07	0.0000	0.13	0.0000	-0.13	0.0125	0.17	0.0016	-0.05	0.3374	0.02	0.7335
Envious	0.01	0.7266	0.01	0.3850	-0.02	0.7013	0.06	0.2880	-0.08	0.1452	0.03	0.5296
Hostile	-0.05	0.0042	0.12	0.0000	-0.07	0.1833	0.19	0.0004	-0.02	0.7397	0.05	0.3556
Lonely	-0.04	0.0256	0.05	0.0022	-0.08	0.1537	0.13	0.0145	-0.09	0.0892	0.07	0.2060
Nervous	-0.04	0.0299	0.07	0.0001	-0.07	0.2211	0.20	0.0001	-0.11	0.0464	0.06	0.2426
Sad	-0.05	0.0051	0.14	0.0000	-0.09	0.0991	0.19	0.0004	-0.10	0.0535	0.05	0.3269
Sick	-0.03	0.1189	0.08	0.0000	-0.02	0.7436	0.09	0.0975	-0.08	0.1223	0.01	0.8071
Tired	-0.03	0.0901	0.05	0.0030	0.00	0.9975	0.19	0.0003	-0.03	0.5431	0.06	0.2520
Unhappy	-0.07	0.0000	0.15	0.0000	-0.11	0.0363	0.21	0.0001	-0.07	0.1976	0.07	0.1880
Upset	-0.09	0.0000	0.18	0.0000	-0.13	0.0146	0.19	0.0003	-0.05	0.3474	0.04	0.4758
Passive	0.08	0.0000	-0.04	0.0220	0.16	0.0031	-0.04	0.4886	0.09	0.0831	-0.14	0.0111
Sleepy	-0.02	0.3031	0.02	0.1511	0.01	0.8054	0.10	0.0504	-0.04	0.4610	0.01	0.8634
Stirred Up	-0.05	0.0013	0.11	0.0000	-0.05	0.3094	0.17	0.0011	-0.05	0.3311	0.09	0.1097
Surprised	0.02	0.2331	0.04	0.0170	-0.03	0.5445	0.04	0.4572	0.06	0.2909	0.00	0.9488

	Individual SUFs (N = 3,776)				SUFs in Range (N = 352)				ESFs in Range (N = 352)			
Emotion	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***	**Pos**	***p***	**Neg**	***p***
Positive-Negative	0.13	0.0000	-0.19	0.0000	0.18	0.0009	-0.31	0.0000	0.03	0.6032	-0.08	0.1198
Positive (Scale)	0.09	0.0000	-0.15	0.0000	0.16	0.0035	-0.23	0.0000	0.06	0.2608	-0.09	0.1059
Negative (Scale)	-0.07	0.0000	0.16	0.0000	-0.11	0.0335	0.20	0.0001	-0.09	0.1016	0.06	0.2789
PANAS PA (Scale)	0.07	0.0001	-0.12	0.0000	0.02	0.7684	-0.12	0.0200	-0.06	0.2965	-0.04	0.4131
PANAS NA (Scale)	-0.06	0.0003	0.14	0.0000	-0.09	0.0961	0.22	0.0000	-0.09	0.0934	0.06	0.2507

The table above shows correlations between LIWC outputs for positive (“Pos”) and negative (“Neg”) emotion, on the one hand, and positive and negative unipolar items and scales (“Emotion”), on the other. Correlations are shown for individual SUFs, SUFs in the circumscribed date ranges, and ESFs in the circumscribed date ranges. The first negative item and first “pure” arousal item are highlighted.

Scales from Opening and Closing Questionnaires

Scale (Questionnaire)	**Pos**	**p**	**Neg**	**p**
PANAS PA (Opening)	0.00	0.9794	-0.02	0.7762
PANAS NA (Opening)	-0.02	0.6573	0.16	0.0029
Life Satisfaction (Opening)	0.08	0.1591	-0.05	0.3207
Life Satisfaction (Closing)	0.08	0.1414	-0.09	0.0999
Depression (Opening)	-0.06	0.2848	0.10	0.0535
Depression (Closing)	-0.07	0.1682	0.08	0.1532
Extraversion (Opening)	-0.06	0.2457	-0.05	0.3691
Neuroticism (Opening)	0.01	0.7968	0.06	0.2486

The table above shows correlations between LIWC outputs for positive (“Pos”) and negative (“Neg”) emotion using SUFs in the circumscribed date ranges, on the one hand, and scales from the opening and closing questionnaires, on the other.

Appendix 11a: Comparison of browsing with all other emotional experiences — Facebook

Emotion	***M*** Browse	***SD*** Browse	***M*** Other	***SD*** Other	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.28	0.99	2.56	0.77	-0.29	361	-6.41	0.0000	0.0000	0.32
Afraid	1.29	0.63	1.31	0.52	-0.02	361	-0.84	0.4034	0.2017	0.03
Amused	1.93	0.92	1.89	0.71	0.04	361	1.23	0.2203	0.1102	0.05
Angry	1.38	0.66	1.39	0.47	-0.01	361	-0.43	0.6681	0.3340	0.02
Anxious	1.66	0.86	1.71	0.75	-0.05	361	-1.83	0.0686	0.0343	0.06
Ashamed	1.28	0.57	1.26	0.47	0.02	361	1.01	0.3130	0.1565	0.04
In Awe	1.46	0.74	1.46	0.59	-0.01	361	-0.29	0.7721	0.3861	0.01
Bored	1.86	0.88	1.68	0.61	0.18	361	4.84	0.0000	0.0000	0.24
Calm	3.11	1.05	3.08	0.84	0.03	361	0.83	0.4047	0.2024	0.03
Depressed	1.45	0.75	1.41	0.58	0.04	361	1.64	0.1018	0.0509	0.06
Disgusted	1.31	0.60	1.30	0.45	0.01	361	0.52	0.6024	0.3012	0.02
Dissatisfied	1.60	0.82	1.57	0.60	0.03	361	0.85	0.3981	0.1991	0.04
At Ease	2.91	1.05	2.87	0.84	0.04	361	1.22	0.2223	0.1112	0.05
Enthusiastic	2.07	0.98	2.15	0.81	-0.08	361	-2.42	0.0160	0.0080	0.09
Envious	1.36	0.66	1.32	0.53	0.03	361	1.41	0.1603	0.0801	0.06
Excited	1.95	0.95	2.05	0.76	-0.09	361	-2.73	0.0067	0.0034	0.11
Happy	2.78	1.07	2.82	0.86	-0.05	361	-1.30	0.1941	0.0971	0.05
Hostile	1.27	0.60	1.32	0.48	-0.04	361	-1.77	0.0779	0.0389	0.08
Inspired	1.97	0.97	2.01	0.82	-0.05	361	-1.46	0.1451	0.0725	0.05
Interested	2.56	1.00	2.57	0.79	-0.01	361	-0.14	0.8891	0.4445	0.01
Lonely	1.58	0.88	1.51	0.69	0.07	361	2.28	0.0233	0.0116	0.09
Loving	2.52	1.19	2.56	1.02	-0.04	361	-1.23	0.2183	0.1092	0.04
Nervous	1.51	0.77	1.55	0.66	-0.04	361	-1.67	0.0957	0.0479	0.06
Passive	2.24	1.02	2.11	0.81	0.13	361	3.76	0.0002	0.0001	0.14
Peaceful	2.90	1.08	2.86	0.89	0.04	361	1.11	0.2692	0.1346	0.04
Proud	2.04	1.01	2.10	0.84	-0.07	361	-1.98	0.0484	0.0242	0.07
Relaxed	3.01	1.04	2.92	0.80	0.09	361	2.42	0.0160	0.0080	0.10
Sad	1.51	0.74	1.45	0.54	0.06	361	2.01	0.0456	0.0228	0.09
Satisfied	2.62	1.07	2.69	0.85	-0.06	361	-1.74	0.0826	0.0413	0.07
Sick	1.33	0.61	1.34	0.51	-0.01	361	-0.37	0.7103	0.3551	0.01
Sleepy	2.22	0.99	2.12	0.72	0.10	361	2.27	0.0236	0.0118	0.11
Stirred Up	1.62	0.76	1.70	0.60	-0.08	361	-2.95	0.0034	0.0017	0.12
Surprised	1.55	0.76	1.52	0.59	0.04	361	1.26	0.2095	0.1048	0.06
Tired	2.32	1.06	2.20	0.73	0.12	361	2.65	0.0083	0.0042	0.13
Unhappy	1.59	0.81	1.57	0.60	0.02	361	0.54	0.5893	0.2947	0.02
Upset	1.55	0.78	1.54	0.54	0.01	361	0.36	0.7164	0.3582	0.02

Emotion	***M*** Browse	***SD*** Browse	***M*** Other	***SD*** Other	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	4.89	1.10	4.98	0.78	-0.09	361	-2.13	0.0342	0.0171	0.10
Activated (Scale)	1.76	0.55	1.85	0.49	-0.09	361	-5.19	0.0000	0.0000	0.17
Deactivated (Scale)	2.46	0.58	2.35	0.46	0.11	361	4.88	0.0000	0.0000	0.21
Positive (Scale)	2.55	0.87	2.58	0.73	-0.03	361	-1.22	0.2251	0.1125	0.04
Negative (Scale)	1.50	0.65	1.48	0.52	0.02	361	1.04	0.2995	0.1497	0.04
PANAS PA (Scale)	2.18	0.81	2.28	0.71	-0.10	361	-3.96	0.0001	0.0000	0.13
PANAS NA (Scale)	1.38	0.55	1.40	0.47	-0.01	361	-0.86	0.3900	0.1950	0.03

The above table displays t-tests comparing the emotional experience of browsing Facebook to all other emotional experiences (“Diff” is the difference in sample means). Two-tailed and one-tailed *p*-values are shown.

Appendix 11b: Comparison of browsing with all other emotional experiences — Twitter

Emotion	***M*** Browse	***SD*** Browse	***M*** Other	***SD*** Other	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.04	0.94	2.36	0.72	-0.33	415	-8.05	0.0000	0.0000	0.39
Afraid	1.47	0.81	1.42	0.62	0.05	415	1.70	0.0898	0.0449	0.07
Amused	2.09	0.95	2.06	0.69	0.03	415	0.82	0.4099	0.2049	0.04
Angry	1.59	0.81	1.54	0.54	0.05	415	1.36	0.1753	0.0877	0.07
Anxious	1.90	1.00	1.89	0.81	0.01	415	0.15	0.8789	0.4395	0.01
Ashamed	1.38	0.72	1.33	0.54	0.05	415	2.17	0.0308	0.0154	0.09
In Awe	1.51	0.75	1.53	0.58	-0.02	415	-0.66	0.5117	0.2558	0.03
Bored	1.98	1.00	1.79	0.68	0.19	415	4.64	0.0000	0.0000	0.22
Calm	3.18	0.98	3.08	0.72	0.10	415	2.75	0.0061	0.0031	0.12
Depressed	1.62	0.89	1.54	0.69	0.08	415	2.73	0.0065	0.0033	0.10
Disgusted	1.60	0.91	1.49	0.60	0.12	415	3.16	0.0017	0.0008	0.16
Dissatisfied	1.92	1.00	1.82	0.77	0.10	415	2.37	0.0183	0.0091	0.11
At Ease	3.03	1.01	2.95	0.74	0.08	415	2.04	0.0423	0.0212	0.09
Enthusiastic	2.16	1.01	2.20	0.78	-0.04	415	-1.26	0.2083	0.1042	0.05
Envious	1.36	0.70	1.40	0.62	-0.04	415	-1.64	0.1025	0.0512	0.06
Excited	2.12	0.97	2.13	0.77	-0.01	415	-0.32	0.7522	0.3761	0.01
Happy	2.79	1.00	2.82	0.78	-0.03	415	-0.78	0.4352	0.2176	0.03
Hostile	1.42	0.70	1.40	0.51	0.02	415	0.77	0.4433	0.2217	0.04
Inspired	2.00	0.97	2.05	0.77	-0.05	415	-1.45	0.1483	0.0741	0.06
Interested	2.68	1.06	2.58	0.79	0.10	415	2.41	0.0165	0.0082	0.10
Lonely	1.81	1.05	1.66	0.81	0.15	415	4.29	0.0000	0.0000	0.16
Loving	2.53	1.14	2.54	0.93	-0.01	415	-0.26	0.7931	0.3966	0.01
Nervous	1.64	0.86	1.66	0.69	-0.02	415	-0.62	0.5347	0.2673	0.03
Passive	2.30	1.02	2.21	0.80	0.09	415	2.30	0.0217	0.0108	0.10
Peaceful	2.92	0.98	2.91	0.79	0.01	415	0.36	0.7174	0.3587	0.02
Proud	2.08	0.97	2.09	0.81	-0.01	415	-0.42	0.6754	0.3377	0.02
Relaxed	3.10	0.99	3.01	0.72	0.09	415	2.12	0.0345	0.0172	0.10
Sad	1.65	0.86	1.59	0.67	0.05	415	1.65	0.0989	0.0495	0.07
Satisfied	2.61	0.95	2.63	0.75	-0.02	415	-0.52	0.6051	0.3025	0.02
Sick	1.42	0.73	1.40	0.61	0.01	415	0.47	0.6418	0.3209	0.02
Sleepy	2.41	1.09	2.26	0.77	0.15	415	3.37	0.0008	0.0004	0.16
Stirred Up	1.94	0.96	1.91	0.69	0.02	415	0.58	0.5625	0.2812	0.03
Surprised	1.55	0.73	1.56	0.61	-0.01	415	-0.49	0.6218	0.3109	0.02
Tired	2.58	1.11	2.47	0.84	0.12	415	2.60	0.0098	0.0049	0.12
Unhappy	1.80	0.92	1.80	0.76	0.00	415	0.01	0.9931	0.4965	0.00
Upset	1.70	0.82	1.67	0.58	0.03	415	0.72	0.4707	0.2353	0.04

Emotion	***M*** Browse	***SD*** Browse	***M*** Other	***SD*** Other	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	4.74	1.08	4.80	0.78	-0.06	415	-1.24	0.2153	0.1077	0.06
Activated (Scale)	1.86	0.56	1.92	0.50	-0.06	415	-3.09	0.0021	0.0011	0.11
Deactivated (Scale)	2.59	0.58	2.47	0.45	0.12	415	5.36	0.0000	0.0000	0.24
Positive (Scale)	2.60	0.78	2.60	0.65	0.00	415	-0.07	0.9435	0.4718	0.00
Negative (Scale)	1.69	0.75	1.64	0.62	0.05	415	2.05	0.0408	0.0204	0.07
PANAS PA (Scale)	2.19	0.79	2.26	0.66	-0.07	415	-2.64	0.0086	0.0043	0.09
PANAS NA (Scale)	1.52	0.62	1.50	0.50	0.03	415	1.31	0.1919	0.0960	0.05

The above table displays t-tests comparing the emotional experience of browsing Twitter to all other emotional experiences (“Diff” is the difference in sample means). Two-tailed and one-tailed *p*-values are shown.

Appendix 12a: Comparison of browsing with in-person interactions — Facebook

Emotion	***M*** Browse	***SD*** Browse	***M*** Interact	***SD*** Interact	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.28	0.98	2.68	0.89	-0.40	355	-8.37	0.0000	0.0000	0.43
Afraid	1.30	0.64	1.31	0.55	-0.01	355	-0.31	0.7579	0.3790	0.01
Amused	1.93	0.91	2.06	0.81	-0.12	355	-3.30	0.0011	0.0005	0.14
Angry	1.39	0.67	1.39	0.55	0.00	355	-0.12	0.9023	0.4511	0.01
Anxious	1.67	0.87	1.69	0.77	-0.02	355	-0.74	0.4626	0.2313	0.03
Ashamed	1.28	0.56	1.24	0.48	0.04	355	1.73	0.0840	0.0420	0.07
In Awe	1.46	0.74	1.52	0.69	-0.06	355	-2.21	0.0275	0.0138	0.08
Bored	1.86	0.87	1.58	0.62	0.28	355	7.46	0.0000	0.0000	0.38
Calm	3.11	1.05	3.09	0.85	0.02	355	0.50	0.6190	0.3095	0.02
Depressed	1.46	0.76	1.37	0.58	0.09	355	3.25	0.0013	0.0006	0.13
Disgusted	1.31	0.60	1.31	0.50	0.00	355	-0.14	0.8916	0.4458	0.01
Dissatisfied	1.60	0.81	1.54	0.62	0.06	355	1.60	0.1104	0.0552	0.08
At Ease	2.92	1.05	2.91	0.89	0.01	355	0.29	0.7731	0.3866	0.01
Enthusiastic	2.07	0.97	2.30	0.90	-0.23	355	-6.57	0.0000	0.0000	0.24
Envious	1.36	0.67	1.32	0.56	0.04	355	1.71	0.0890	0.0445	0.06
Excited	1.96	0.95	2.19	0.84	-0.23	355	-6.47	0.0000	0.0000	0.25
Happy	2.78	1.06	2.97	0.90	-0.19	355	-4.89	0.0000	0.0000	0.19
Hostile	1.28	0.61	1.32	0.52	-0.04	355	-1.80	0.0735	0.0367	0.08
Inspired	1.97	0.96	2.08	0.90	-0.11	355	-3.16	0.0017	0.0009	0.12
Interested	2.57	0.99	2.71	0.89	-0.14	355	-3.47	0.0006	0.0003	0.15
Lonely	1.58	0.88	1.39	0.64	0.19	355	5.71	0.0000	0.0000	0.25
Loving	2.52	1.19	2.76	1.07	-0.24	355	-5.81	0.0000	0.0000	0.21
Nervous	1.52	0.78	1.55	0.68	-0.03	355	-0.98	0.3282	0.1641	0.04
Passive	2.24	1.02	2.05	0.85	0.19	355	5.08	0.0000	0.0000	0.20
Peaceful	2.90	1.08	2.91	0.92	-0.01	355	-0.24	0.8141	0.4071	0.01
Proud	2.04	1.01	2.22	0.93	-0.18	355	-4.98	0.0000	0.0000	0.18
Relaxed	3.01	1.05	2.94	0.88	0.07	355	1.66	0.0977	0.0489	0.07
Sad	1.50	0.73	1.42	0.57	0.09	355	2.83	0.0049	0.0025	0.13
Satisfied	2.63	1.07	2.80	0.92	-0.17	355	-4.11	0.0000	0.0000	0.17
Sick	1.33	0.61	1.32	0.52	0.00	355	0.19	0.8471	0.4235	0.01
Sleepy	2.21	0.97	1.97	0.79	0.24	355	5.82	0.0000	0.0000	0.27
Stirred Up	1.63	0.76	1.76	0.70	-0.14	355	-4.55	0.0000	0.0000	0.19
Surprised	1.56	0.77	1.58	0.70	-0.02	355	-0.53	0.5967	0.2983	0.03
Tired	2.31	1.05	2.11	0.81	0.20	355	4.38	0.0000	0.0000	0.22
Unhappy	1.59	0.81	1.53	0.61	0.06	355	1.74	0.0826	0.0413	0.09
Upset	1.56	0.79	1.54	0.59	0.02	355	0.57	0.5684	0.2842	0.03

Emotion	***M*** Browse	***SD*** Browse	***M*** Interact	***SD*** Interact	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	4.89	1.11	5.13	0.87	-0.24	355	-4.95	0.0000	0.0000	0.24
Activated (Scale)	1.77	0.55	1.91	0.52	-0.14	355	-7.69	0.0000	0.0000	0.26
Deactivated (Scale)	2.46	0.58	2.29	0.47	0.17	355	7.51	0.0000	0.0000	0.31
Positive (Scale)	2.56	0.87	2.68	0.77	-0.13	355	-4.67	0.0000	0.0000	0.15
Negative (Scale)	1.50	0.66	1.45	0.52	0.05	355	2.15	0.0322	0.0161	0.09
PANAS PA (Scale)	2.18	0.81	2.40	0.76	-0.21	355	-7.79	0.0000	0.0000	0.27
PANAS NA (Scale)	1.39	0.56	1.39	0.48	0.00	355	-0.26	0.7914	0.3957	0.01

The above table displays t-tests comparing the emotional experience of browsing Facebook to the emotional experience of interacting with others in person (“Diff” is the difference in sample means).

Appendix 12b: Comparison of browsing with in-person interactions — Twitter

Emotion	***M*** Browse	***SD*** Browse	***M*** Interact	***SD*** Interact	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.03	0.93	2.52	0.81	-0.49	397	-11.62	0.0000	0.0000	0.56
Afraid	1.45	0.79	1.39	0.62	0.06	397	2.14	0.0326	0.0163	0.08
Amused	2.09	0.95	2.24	0.81	-0.15	397	-3.42	0.0007	0.0003	0.17
Angry	1.58	0.81	1.53	0.60	0.05	397	1.38	0.1694	0.0847	0.07
Anxious	1.87	0.97	1.87	0.86	0.00	397	0.02	0.9838	0.4919	0.00
Ashamed	1.37	0.71	1.30	0.54	0.07	397	2.48	0.0136	0.0068	0.10
In Awe	1.52	0.75	1.59	0.66	-0.07	397	-2.07	0.0394	0.0197	0.09
Bored	1.95	0.98	1.66	0.67	0.30	397	7.46	0.0000	0.0000	0.35
Calm	3.17	0.98	3.05	0.79	0.11	397	2.92	0.0037	0.0019	0.13
Depressed	1.60	0.88	1.46	0.66	0.14	397	4.53	0.0000	0.0000	0.18
Disgusted	1.60	0.90	1.50	0.67	0.10	397	2.77	0.0058	0.0029	0.13
Dissatisfied	1.90	0.98	1.75	0.78	0.15	397	3.57	0.0004	0.0002	0.17
At Ease	3.03	1.01	3.02	0.81	0.00	397	0.06	0.9549	0.4775	0.00
Enthusiastic	2.15	1.00	2.38	0.89	-0.23	397	-5.74	0.0000	0.0000	0.24
Envious	1.36	0.69	1.38	0.60	-0.03	397	-1.09	0.2746	0.1373	0.04
Excited	2.13	0.97	2.34	0.84	-0.21	397	-5.86	0.0000	0.0000	0.24
Happy	2.79	0.99	3.03	0.83	-0.24	397	-6.09	0.0000	0.0000	0.26
Hostile	1.42	0.71	1.43	0.59	0.00	397	-0.16	0.8695	0.4347	0.01
Inspired	2.01	0.97	2.11	0.84	-0.11	397	-2.88	0.0042	0.0021	0.12
Interested	2.67	1.05	2.71	0.86	-0.04	397	-1.09	0.2772	0.1386	0.04
Lonely	1.78	1.04	1.55	0.77	0.24	397	6.25	0.0000	0.0000	0.26
Loving	2.55	1.15	2.81	1.01	-0.26	397	-6.34	0.0000	0.0000	0.24
Nervous	1.64	0.85	1.64	0.69	-0.01	397	-0.26	0.7935	0.3967	0.01
Passive	2.28	1.01	2.10	0.83	0.18	397	4.59	0.0000	0.0000	0.20
Peaceful	2.92	0.98	2.95	0.83	-0.03	397	-0.80	0.4269	0.2134	0.03
Proud	2.08	0.97	2.20	0.87	-0.12	397	-3.49	0.0005	0.0003	0.13
Relaxed	3.10	0.98	3.03	0.79	0.07	397	1.74	0.0819	0.0410	0.08
Sad	1.63	0.85	1.53	0.67	0.10	397	2.95	0.0033	0.0017	0.14
Satisfied	2.61	0.94	2.77	0.82	-0.16	397	-4.26	0.0000	0.0000	0.18
Sick	1.42	0.74	1.36	0.57	0.06	397	2.27	0.0239	0.0120	0.09
Sleepy	2.41	1.08	2.09	0.80	0.32	397	7.61	0.0000	0.0000	0.34
Stirred Up	1.94	0.95	1.99	0.78	-0.05	397	-1.23	0.2185	0.1092	0.06
Surprised	1.56	0.76	1.60	0.68	-0.04	397	-1.45	0.1474	0.0737	0.06
Tired	2.59	1.11	2.33	0.90	0.26	397	5.69	0.0000	0.0000	0.26
Unhappy	1.78	0.90	1.70	0.73	0.08	397	2.20	0.0286	0.0143	0.09
Upset	1.69	0.81	1.66	0.63	0.03	397	0.95	0.3435	0.1718	0.05

Emotion	***M*** Browse	***SD*** Browse	***M*** Interact	***SD*** Interact	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	4.76	1.08	5.03	0.87	-0.27	397	-5.66	0.0000	0.0000	0.27
Activated (Scale)	1.86	0.57	1.99	0.52	-0.13	397	-7.26	0.0000	0.0000	0.25
Deactivated (Scale)	2.58	0.59	2.38	0.47	0.21	397	9.18	0.0000	0.0000	0.39
Positive (Scale)	2.60	0.77	2.73	0.68	-0.13	397	-4.59	0.0000	0.0000	0.18
Negative (Scale)	1.68	0.74	1.58	0.61	0.09	397	3.58	0.0004	0.0002	0.14
PANAS PA (Scale)	2.19	0.79	2.38	0.71	-0.20	397	-7.29	0.0000	0.0000	0.26
PANAS NA (Scale)	1.51	0.61	1.48	0.51	0.03	397	1.51	0.1326	0.0663	0.05

The above table displays t-tests comparing the emotional experience of browsing Twitter to the emotional experience of interacting with others in person ("Diff" is the difference in sample means).

Appendix 13a: Comparison of browsing with all other device uses — Facebook

Emotion	***M*** Browse	***SD*** Browse	***M*** Other	***SD*** Other	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.25	0.99	2.47	0.91	-0.22	346	-4.36	0.0000	0.0000	0.23
Afraid	1.29	0.62	1.32	0.59	-0.03	346	-1.15	0.2514	0.1257	0.06
Amused	1.92	0.91	1.87	0.83	0.05	346	1.11	0.2683	0.1341	0.05
Angry	1.38	0.66	1.39	0.55	-0.02	346	-0.51	0.6107	0.3053	0.03
Anxious	1.65	0.86	1.76	0.85	-0.11	346	-3.23	0.0013	0.0007	0.13
Ashamed	1.28	0.56	1.27	0.53	0.01	346	0.42	0.6722	0.3361	0.02
In Awe	1.44	0.72	1.42	0.61	0.02	346	0.65	0.5162	0.2581	0.03
Bored	1.86	0.88	1.79	0.73	0.07	346	1.52	0.1287	0.0643	0.08
Calm	3.11	1.05	3.08	0.96	0.02	346	0.57	0.5681	0.2841	0.02
Depressed	1.45	0.75	1.43	0.64	0.02	346	0.72	0.4737	0.2368	0.03
Disgusted	1.30	0.59	1.28	0.54	0.02	346	0.52	0.6015	0.3008	0.03
Dissatisfied	1.60	0.81	1.61	0.74	-0.01	346	-0.25	0.8000	0.4000	0.01
At Ease	2.91	1.05	2.91	0.96	0.01	346	0.18	0.8596	0.4298	0.01
Enthusiastic	2.05	0.97	2.12	0.87	-0.07	346	-1.80	0.0722	0.0361	0.08
Envious	1.34	0.64	1.32	0.54	0.01	346	0.50	0.6186	0.3093	0.02
Excited	1.93	0.94	2.00	0.81	-0.07	346	-1.74	0.0833	0.0417	0.08
Happy	2.77	1.07	2.80	0.95	-0.03	346	-0.68	0.4948	0.2474	0.03
Hostile	1.27	0.60	1.31	0.56	-0.04	346	-1.47	0.1438	0.0719	0.07
Inspired	1.94	0.95	1.98	0.89	-0.04	346	-1.12	0.2623	0.1311	0.05
Interested	2.54	1.00	2.64	0.93	-0.09	346	-2.19	0.0295	0.0148	0.10
Lonely	1.58	0.88	1.56	0.77	0.01	346	0.35	0.7299	0.3650	0.01
Loving	2.49	1.18	2.45	1.07	0.04	346	0.80	0.4261	0.2131	0.03
Nervous	1.50	0.78	1.60	0.77	-0.10	346	-2.82	0.0051	0.0025	0.13
Passive	2.23	1.02	2.13	0.87	0.10	346	2.68	0.0078	0.0039	0.11
Peaceful	2.89	1.09	2.84	1.00	0.05	346	1.28	0.2002	0.1001	0.05
Proud	2.02	1.00	2.07	0.91	-0.05	346	-1.19	0.2361	0.1181	0.05
Relaxed	3.00	1.05	2.93	0.95	0.07	346	1.51	0.1307	0.0654	0.07
Sad	1.50	0.73	1.46	0.62	0.04	346	1.23	0.2213	0.1106	0.06
Satisfied	2.61	1.07	2.68	0.95	-0.07	346	-1.56	0.1200	0.0600	0.07
Sick	1.33	0.61	1.33	0.60	0.00	346	-0.14	0.8856	0.4428	0.01
Sleepy	2.21	0.99	2.07	0.88	0.14	346	2.93	0.0037	0.0018	0.15
Stirred Up	1.61	0.75	1.75	0.72	-0.13	346	-3.82	0.0002	0.0001	0.18
Surprised	1.54	0.75	1.51	0.63	0.03	346	0.87	0.3828	0.1914	0.04
Tired	2.31	1.06	2.13	0.89	0.18	346	3.77	0.0002	0.0001	0.18
Unhappy	1.59	0.80	1.61	0.69	-0.02	346	-0.52	0.6051	0.3025	0.03
Upset	1.55	0.79	1.56	0.67	-0.01	346	-0.20	0.8426	0.4213	0.01

Emotion	*M* Browse	*SD* Browse	*M* Other	*SD* Other	Diff	*df*	*t*	*p* 2-Tail	*p* 1-Tail	*d*
Positive-Negative	4.88	1.11	4.93	0.95	-0.05	346	-1.06	0.2914	0.1457	0.05
Activated (Scale)	1.75	0.54	1.85	0.52	-0.10	346	-5.12	0.0000	0.0000	0.19
Deactivated (Scale)	2.45	0.58	2.36	0.51	0.10	346	4.00	0.0001	0.0000	0.18
Positive (Scale)	2.54	0.86	2.57	0.78	-0.03	346	-0.86	0.3897	0.1948	0.03
Negative (Scale)	1.50	0.65	1.50	0.58	0.00	346	-0.04	0.9682	0.4841	0.00
PANAS PA (Scale)	2.16	0.81	2.26	0.75	-0.09	346	-3.21	0.0015	0.0007	0.12
PANAS NA (Scale)	1.38	0.55	1.41	0.51	-0.03	346	-1.62	0.1056	0.0528	0.06

The above table displays t-tests comparing the emotional experience of browsing Facebook to the emotional experience of all other uses of a computer, smartphone or tablet (“Diff” is the difference in sample means).

Appendix 13b: Comparison of browsing with all other device uses — Twitter

Emotion	***M*** Browse	***SD*** Browse	***M*** Other	***SD*** Other	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.03	0.92	2.22	0.82	-0.19	402	-4.39	0.0000	0.0000	0.22
Afraid	1.47	0.80	1.45	0.69	0.02	402	0.62	0.5356	0.2678	0.03
Amused	2.09	0.95	2.09	0.79	0.00	402	0.09	0.9244	0.4622	0.01
Angry	1.58	0.81	1.55	0.67	0.04	402	0.94	0.3472	0.1736	0.05
Anxious	1.88	0.97	1.92	0.90	-0.04	402	-1.02	0.3077	0.1538	0.04
Ashamed	1.38	0.72	1.33	0.62	0.05	402	1.89	0.0597	0.0299	0.08
In Awe	1.52	0.75	1.54	0.70	-0.02	402	-0.64	0.5257	0.2628	0.03
Bored	1.96	0.99	1.89	0.84	0.07	402	1.58	0.1141	0.0570	0.08
Calm	3.18	0.98	3.09	0.83	0.08	402	1.86	0.0641	0.0320	0.09
Depressed	1.62	0.89	1.56	0.73	0.07	402	2.25	0.0252	0.0126	0.08
Disgusted	1.60	0.90	1.49	0.70	0.11	402	2.81	0.0052	0.0026	0.14
Dissatisfied	1.92	0.99	1.85	0.85	0.07	402	1.47	0.1417	0.0709	0.07
At Ease	3.03	1.00	2.93	0.81	0.10	402	2.09	0.0377	0.0188	0.11
Enthusiastic	2.16	0.99	2.18	0.84	-0.03	402	-0.67	0.5058	0.2529	0.03
Envious	1.36	0.69	1.44	0.69	-0.08	402	-2.70	0.0073	0.0037	0.11
Excited	2.10	0.94	2.11	0.83	-0.01	402	-0.33	0.7392	0.3696	0.01
Happy	2.78	0.99	2.81	0.81	-0.04	402	-0.89	0.3726	0.1863	0.04
Hostile	1.42	0.70	1.41	0.64	0.00	402	0.13	0.8936	0.4468	0.01
Inspired	2.00	0.95	2.08	0.84	-0.09	402	-2.06	0.0399	0.0199	0.10
Interested	2.68	1.06	2.68	0.89	0.00	402	-0.10	0.9209	0.4604	0.00
Lonely	1.80	1.05	1.75	0.92	0.05	402	1.25	0.2125	0.1063	0.05
Loving	2.53	1.13	2.45	1.00	0.08	402	1.94	0.0526	0.0263	0.08
Nervous	1.63	0.85	1.68	0.76	-0.05	402	-1.31	0.1897	0.0948	0.06
Passive	2.29	1.01	2.22	0.85	0.07	402	1.80	0.0731	0.0366	0.08
Peaceful	2.92	0.97	2.90	0.87	0.01	402	0.31	0.7594	0.3797	0.01
Proud	2.07	0.96	2.12	0.87	-0.05	402	-1.29	0.1961	0.0980	0.05
Relaxed	3.10	0.98	3.02	0.81	0.08	402	1.83	0.0675	0.0338	0.09
Sad	1.65	0.86	1.62	0.74	0.02	402	0.67	0.5006	0.2503	0.03
Satisfied	2.62	0.95	2.60	0.79	0.01	402	0.31	0.7575	0.3788	0.01
Sick	1.41	0.72	1.41	0.65	0.00	402	0.02	0.9826	0.4913	0.00
Sleepy	2.40	1.08	2.25	0.90	0.15	402	3.26	0.0012	0.0006	0.16
Stirred Up	1.94	0.96	1.95	0.84	-0.01	402	-0.22	0.8223	0.4111	0.01
Surprised	1.55	0.74	1.56	0.72	-0.02	402	-0.46	0.6437	0.3219	0.02
Tired	2.59	1.11	2.45	0.95	0.13	402	2.63	0.0088	0.0044	0.13
Unhappy	1.80	0.92	1.83	0.85	-0.03	402	-0.93	0.3546	0.1773	0.04
Upset	1.70	0.82	1.68	0.66	0.02	402	0.50	0.6162	0.3081	0.03

Emotion	*M* Browse	*SD* Browse	*M* Other	*SD* Other	Diff	*df*	*t*	*p* 2-Tail	*p* 1-Tail	*d*
Positive-Negative	4.74	1.07	4.77	0.86	-0.03	402	-0.64	0.5227	0.2613	0.03
Activated (Scale)	1.85	0.56	1.91	0.55	-0.05	402	-2.67	0.0080	0.0040	0.09
Deactivated (Scale)	2.59	0.58	2.49	0.52	0.10	402	3.97	0.0001	0.0000	0.18
Positive (Scale)	2.59	0.77	2.59	0.66	0.00	402	0.06	0.9533	0.4766	0.00
Negative (Scale)	1.69	0.75	1.66	0.66	0.03	402	1.02	0.3094	0.1547	0.04
PANAS PA (Scale)	2.18	0.77	2.26	0.69	-0.07	402	-2.44	0.0151	0.0075	0.10
PANAS NA (Scale)	1.52	0.62	1.51	0.55	0.01	402	0.46	0.6428	0.3214	0.02

The above table displays t-tests comparing the emotional experience of browsing Twitter to the emotional experience of all other uses of a computer, smartphone or tablet ("Diff" is the difference in sample means).

Appendix 14a: Comparison of status updates with all experiences except browsing — Facebook

Emotion	***M*** SUF	***SD*** SUF	***M*** ESF	***SD*** ESF	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.37	0.98	2.57	0.86	-0.20	340	-4.41	0.0000	0.0000	0.22
Afraid	1.24	0.55	1.31	0.54	-0.06	340	-2.49	0.0132	0.0066	0.11
Amused	2.39	0.99	1.92	0.77	0.47	340	8.95	0.0000	0.0000	0.53
Angry	1.43	0.65	1.36	0.52	0.07	340	2.05	0.0411	0.0205	0.12
Anxious	1.54	0.72	1.68	0.78	-0.13	340	-3.48	0.0006	0.0003	0.18
Ashamed	1.21	0.50	1.25	0.52	-0.04	340	-1.61	0.1089	0.0544	0.08
In Awe	1.90	0.87	1.47	0.66	0.42	340	10.48	0.0000	0.0000	0.55
Bored	1.47	0.69	1.65	0.61	-0.18	340	-5.73	0.0000	0.0000	0.28
Calm	2.87	1.00	3.08	0.89	-0.21	340	-5.08	0.0000	0.0000	0.22
Depressed	1.33	0.58	1.40	0.66	-0.07	340	-2.59	0.0101	0.0051	0.11
Disgusted	1.37	0.66	1.29	0.52	0.09	340	2.68	0.0077	0.0039	0.15
Dissatisfied	1.54	0.73	1.55	0.67	-0.01	340	-0.30	0.7672	0.3836	0.02
At Ease	2.72	1.04	2.93	0.90	-0.22	340	-5.45	0.0000	0.0000	0.22
Enthusiastic	2.44	1.06	2.18	0.88	0.26	340	5.31	0.0000	0.0000	0.26
Envious	1.28	0.58	1.32	0.57	-0.04	340	-1.62	0.1052	0.0526	0.07
Excited	2.37	1.07	2.07	0.85	0.30	340	6.43	0.0000	0.0000	0.31
Happy	2.95	1.11	2.85	0.94	0.10	340	2.12	0.0347	0.0174	0.10
Hostile	1.27	0.53	1.30	0.52	-0.03	340	-1.02	0.3103	0.1552	0.05
Inspired	2.27	0.99	2.03	0.87	0.24	340	5.50	0.0000	0.0000	0.25
Interested	2.77	1.05	2.56	0.89	0.21	340	4.73	0.0000	0.0000	0.22
Lonely	1.40	0.74	1.47	0.74	-0.07	340	-2.57	0.0105	0.0052	0.10
Loving	2.71	1.23	2.58	1.09	0.13	340	2.82	0.0051	0.0025	0.12
Nervous	1.40	0.62	1.52	0.70	-0.12	340	-3.61	0.0004	0.0002	0.18
Passive	1.83	0.88	2.14	0.89	-0.31	340	-8.49	0.0000	0.0000	0.35
Peaceful	2.74	1.08	2.89	0.95	-0.15	340	-3.91	0.0001	0.0001	0.15
Proud	2.52	1.08	2.12	0.92	0.40	340	7.60	0.0000	0.0000	0.40
Relaxed	2.77	1.03	2.95	0.85	-0.19	340	-4.25	0.0000	0.0000	0.20
Sad	1.45	0.67	1.43	0.60	0.02	340	0.68	0.4976	0.2488	0.03
Satisfied	2.71	1.08	2.74	0.92	-0.03	340	-0.74	0.4595	0.2298	0.03
Sick	1.24	0.54	1.35	0.58	-0.11	340	-3.88	0.0001	0.0001	0.19
Sleepy	1.67	0.79	2.06	0.77	-0.39	340	-9.60	0.0000	0.0000	0.51
Stirred Up	1.72	0.78	1.67	0.68	0.05	340	1.20	0.2305	0.1152	0.06
Surprised	1.74	0.80	1.51	0.65	0.23	340	5.72	0.0000	0.0000	0.32
Tired	1.75	0.84	2.16	0.82	-0.41	340	-9.82	0.0000	0.0000	0.50
Unhappy	1.52	0.69	1.54	0.67	-0.01	340	-0.36	0.7154	0.3577	0.02
Upset	1.54	0.69	1.51	0.62	0.03	340	0.88	0.3801	0.1901	0.05

Emotion	***M*** SUF	***SD*** SUF	***M*** ESF	***SD*** ESF	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	5.25	1.17	5.03	0.89	0.22	340	3.64	0.0003	0.0002	0.22
Activated (Scale)	1.86	0.55	1.84	0.52	0.02	340	0.98	0.3283	0.1642	0.04
Deactivated (Scale)	2.06	0.53	2.34	0.49	-0.28	340	-12.64	0.0000	0.0000	0.55
Positive (Scale)	2.68	0.91	2.62	0.78	0.06	340	1.76	0.0787	0.0394	0.07
Negative (Scale)	1.44	0.56	1.45	0.58	-0.02	340	-0.62	0.5369	0.2684	0.03
PANAS PA (Scale)	2.47	0.87	2.29	0.76	0.18	340	5.48	0.0000	0.0000	0.22
PANAS NA (Scale)	1.33	0.49	1.38	0.51	-0.04	340	-1.87	0.0626	0.0313	0.08

The above table displays t-tests comparing status updates (SUFs) and emotional experience (ESFs) for the Facebook sample. ESFs where the participant is browsing Facebook are excluded from the above ESF averages.

Appendix 14b: Comparison of status updates with all experiences except browsing — Twitter

Emotion	***M*** SUF	***SD*** SUF	***M*** ESF	***SD*** ESF	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Active	2.10	0.90	2.30	0.79	-0.20	347	-4.69	0.0000	0.0000	0.24
Afraid	1.37	0.64	1.35	0.59	0.02	347	0.53	0.5952	0.2976	0.03
Amused	2.37	0.95	1.99	0.78	0.37	347	7.82	0.0000	0.0000	0.43
Angry	1.73	0.82	1.47	0.61	0.26	347	5.88	0.0000	0.0000	0.36
Anxious	1.76	0.82	1.84	0.84	-0.09	347	-2.33	0.0202	0.0101	0.10
Ashamed	1.29	0.53	1.31	0.54	-0.02	347	-0.50	0.6172	0.3086	0.03
In Awe	1.86	0.86	1.55	0.67	0.31	347	7.91	0.0000	0.0000	0.41
Bored	1.67	0.73	1.75	0.73	-0.07	347	-1.81	0.0704	0.0352	0.10
Calm	2.81	0.90	3.06	0.80	-0.26	347	-6.35	0.0000	0.0000	0.31
Depressed	1.54	0.82	1.51	0.74	0.03	347	1.05	0.2937	0.1469	0.04
Disgusted	1.66	0.82	1.43	0.65	0.22	347	5.37	0.0000	0.0000	0.31
Dissatisfied	1.88	0.87	1.75	0.81	0.13	347	2.81	0.0052	0.0026	0.16
At Ease	2.75	0.96	2.93	0.82	-0.18	347	-4.31	0.0000	0.0000	0.20
Enthusiastic	2.35	0.99	2.18	0.87	0.17	347	3.60	0.0004	0.0002	0.18
Envious	1.33	0.56	1.35	0.59	-0.02	347	-0.55	0.5795	0.2898	0.03
Excited	2.25	0.93	2.10	0.85	0.16	347	3.44	0.0006	0.0003	0.18
Happy	2.73	0.95	2.82	0.88	-0.08	347	-1.95	0.0518	0.0259	0.09
Hostile	1.52	0.70	1.34	0.51	0.18	347	4.93	0.0000	0.0000	0.30
Inspired	2.29	0.95	2.03	0.84	0.26	347	5.56	0.0000	0.0000	0.29
Interested	2.73	0.97	2.53	0.88	0.20	347	4.37	0.0000	0.0000	0.21
Lonely	1.56	0.86	1.63	0.86	-0.07	347	-2.00	0.0462	0.0231	0.09
Loving	2.32	1.01	2.50	0.97	-0.17	347	-3.83	0.0002	0.0001	0.17
Nervous	1.54	0.72	1.61	0.74	-0.08	347	-2.04	0.0424	0.0212	0.10
Passive	1.96	0.85	2.17	0.85	-0.21	347	-5.37	0.0000	0.0000	0.24
Peaceful	2.69	0.95	2.94	0.87	-0.24	347	-5.44	0.0000	0.0000	0.27
Proud	2.32	0.95	2.04	0.83	0.28	347	5.45	0.0000	0.0000	0.31
Relaxed	2.80	0.93	3.01	0.78	-0.22	347	-4.84	0.0000	0.0000	0.25
Sad	1.70	0.84	1.55	0.70	0.14	347	3.71	0.0002	0.0001	0.18
Satisfied	2.51	0.91	2.61	0.85	-0.11	347	-2.52	0.0121	0.0060	0.12
Sick	1.31	0.60	1.35	0.62	-0.04	347	-1.46	0.1448	0.0724	0.06
Sleepy	1.90	0.92	2.18	0.89	-0.28	347	-5.76	0.0000	0.0000	0.31
Stirred Up	2.22	0.97	1.87	0.78	0.35	347	7.63	0.0000	0.0000	0.39
Surprised	1.81	0.77	1.51	0.63	0.30	347	7.40	0.0000	0.0000	0.42
Tired	2.07	1.00	2.38	0.97	-0.31	347	-6.43	0.0000	0.0000	0.32
Unhappy	1.87	0.89	1.74	0.76	0.14	347	3.21	0.0015	0.0007	0.17
Upset	1.88	0.91	1.61	0.69	0.27	347	5.74	0.0000	0.0000	0.33

Emotion	***M*** SUF	***SD*** SUF	***M*** ESF	***SD*** ESF	**Diff**	***df***	***t***	***p*** 2-Tail	***p*** 1-Tail	***d***
Positive-Negative	4.70	1.20	4.87	0.89	-0.17	347	-2.73	0.0066	0.0033	0.16
Activated (Scale)	1.94	0.55	1.87	0.52	0.07	347	3.06	0.0024	0.0012	0.14
Deactivated (Scale)	2.20	0.57	2.42	0.50	-0.22	347	-7.94	0.0000	0.0000	0.42
Positive (Scale)	2.56	0.79	2.59	0.70	-0.03	347	-0.82	0.4156	0.2078	0.04
Negative (Scale)	1.71	0.73	1.58	0.62	0.12	347	3.71	0.0002	0.0001	0.18
PANAS PA (Scale)	2.36	0.78	2.22	0.71	0.14	347	4.05	0.0001	0.0000	0.19
PANAS NA (Scale)	1.52	0.57	1.44	0.51	0.07	347	2.63	0.0090	0.0045	0.14

The above table displays t-tests comparing status updates (SUFs) and emotional experience (ESFs) for the Twitter sample. ESFs where the participant is browsing Twitter are excluded from the above ESF averages.