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Social Media Elements, Ecologies, and Effects

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Abstract

This review delineates core components of the social media ecosystem, specifying how online platforms complicate established social psychological effects. We assess four pairs of social media elements and effects: profiles and self-presentation; networks and social mobilization; streams and social comparison; and messages and social connectedness. In the process, we describe features and affordances that comprise each element, underscoring the complexity of social media contexts as they shift to a central topic within psychology. Reflecting on this transitional state, we discuss how researchers will struggle to replicate the effects of dynamic social environments. Consequently, we outline the obstacles in isolating effects that reoccur across platforms, as well as the challenges and opportunities that come with measuring contexts across periods. By centering on the elements that define the online ecosystem, psychological research can establish a more durable foundation for replicating the effects of social media and chronicling the evolution of social interaction.

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REINTRODUCING SOCIAL MEDIA

Like earlier forms of communication technology, social media are believed to have psychological effects that users and researchers are still attempting to identify, articulate, and define. Even the platforms themselves are difficult to describe. Earlier renditions of communication media (telegraph, telegram, radio, film, telephone, etc.) could be described in terms that drew from public understandings of previous media—the television as a smaller version of the film screen, for instance. Contemporary media platforms, however, represent a nebulous constellation of features that evoke older channels as well as newer interfaces, providing an experience that is evocative of both mass media and interpersonal channels. And social media platforms iterate, incessantly. In the 15 years since thefacebook.com bounced around college halls and monitors, much has changed on the website-turned-platform, not to mention its expired neighbors such as Friendster, AIM, and Vine.

Despite such dynamism, there are core facets of social media that have proven resilient in their (ongoing) placement in communication history. This review reflects on some of the key social psychological implications of social media, while considering how the features of online contexts shape their effects. Previous reviews have discussed the moving-target problem of online technology research (Gosling & Mason 2015, Valkenburg et al. 2016)—that is, the challenge of researching media artifacts and effects that are constantly in flux. It is clear by now that no simple solution to this problem exists. At the same time, some approaches are more likely to produce enduring knowledge about social technologies than others. Here, we reconsider how researchers can establish the contextual stability that is necessary to ground psychological effects long after Facebook is decommissioned.

Research on the psychological implications of social media can be understood within the rubric of media effects. A number of reviews in recent years have delineated the existing literature on media effects and Internet psychology (e.g., Gosling & Mason 2015, Okdie et al. 2014, Valkenburg et al. 2016). Similar to media psychology research at large, social media research is an especially difficult area to summarize due to its interdisciplinary nature (see Fox & McEwan 2020). Earlier this decade, reviews concerning the antecedents and outcomes of one particularly popular social network site (SNS), Facebook, began to appear in various psychology, communication, and

Social media: computer-mediated communication channels that allow users to engage in social interaction with broad and narrow audiences in real time or asynchronously

Social network site (SNS): a subclass of social media that is defined by three elements: profile, network, and stream

human–computer interaction (HCI) outlets (Anderson et al. 2012, Blachnio et al. 2013, Caers et al. 2013, Wilson et al. 2012). These reviews identified a range of focal topics within the literature, including types of users, types of uses, identity presentation, relationship initiation, relationship maintenance, and social interaction, among other psychological precursors and outcomes.

Although numerous online platforms vie for user attention today, a disproportionate amount of research has focused on Facebook, leading to concerns about generalizability (Rains & Brunner 2015, Stoycheff et al. 2017). In recent years, the social media literature has blossomed into a large landscape that spans many disciplines and subfields, extending well beyond the purview of our review. Social media now touch almost every dimension of human experience, and academic scholarship increasingly reflects this diversity. While reviews of central platforms and broad outcomes are essential, they can also oversimplify how social technologies become interwoven in the lives and mentalities of their users. Despite the utopian and dystopian narratives that often emerge in response to the introduction of new technologies (Baym 2015), empirical research often reveals a more complicated story about contextual and conditional media effects (Bayer et al. 2018, Valkenburg et al. 2016). Basic cognitive processes are still activated when individuals interact in social media contexts, and online platforms should be expected to reshape and redirect how the same underlying mechanisms occur (Clark et al. 2018, Sparrow & Chatman 2013, Tamir & Ward 2015). Nonetheless, the ability to share momentary thoughts, identity characteristics, and quotidian activities with curated social networks has clearly affected how we as users understand ourselves and our social worlds. The embeddedness of these everyday tools, in turn, offers researchers innovative ways to explicate and extend theory.

For these reasons, our goal differs from past compilations of the media psychology literature. Rather than attempting a comprehensive explication of media effect theories (e.g., Valkenburg et al. 2016) or rising trends within online psychology research (Gosling & Mason 2015), we focus on a subset of social psychological processes that are linked to key components, or elements, of social media. Along the way, we consider the need to situate the psychological effects of social media within defined contexts, and we discuss the obstacles inherent in measuring and replicating those effects over time. Altogether, our review aims to align the moving target with psychological questions that go above and across particular platforms.

Defining Social Media

There is not one commonly accepted scholarly (or colloquial) definition of social media. In part, this lack of integration is due to the fast-changing nature of social media noted above, which makes it difficult to create a static description of fluid interaction tools. Moreover, the fact that social media exhibit qualities of both mass media and interpersonal communication makes them complicated to define (Vorderer et al. 2018). At the highest level, social media can be categorized under the umbrella term of computer-mediated communication (CMC), often associated with online technologies more generally (Kiesler et al. 1984, Walther 2011). Carr & Hayes's (2015, p. 50) well-accepted definition, which we adopt for this article, suggests that social media must have five discrete requirements: "Social media are Internet-based, disentrained, and persistent channels of masspersonal communication facilitating perceptions of interactions among users, deriving value primarily from user-generated content." In other words, social media must be Internet-based (i.e., online) as well as disentrained, meaning that they support asynchronous or non-live social interaction. Also, social media should be interactive, or perceived as social in nature, and user-generated, meaning that their central value must come from social interaction with other users. Finally, social media are masspersonal in that they allow users to broadcast interpersonal communication to large audiences.

Computer-mediated communication (CMC): social interaction occurring on computers or via the Internet, such as email, instant messaging, blogs, and social media exchanges

Profile: a social media element enabling users to maintain unique collections of personal attributes created by the user, their network, and/or the platform

Stream: a social media element that allows users to consume and/or engage with feeds of user-generated content provided by their network

Network: a social media element representing social connections, such as a collection of contacts created via mutual “friending” or one-way “following”

Overall, existing definitions tend to emphasize how social media expand the capabilities of face-to-face interaction to provide new opportunities for finding, observing, and interacting efficiently with others across time and space. In doing so, such definitions reflect the larger shift toward an integration of one-on-one forms of communication (e.g., face-to-face, letters, texting) with one-to-many channels (e.g., television, radio) that were more distinct in past eras of society and research (O’Sullivan & Carr 2018). Still, there remains substantial debate over the definition(s) of social media among researchers (Fox & McEwan 2020), leading to variability in the measurement practices of psychological studies.

Social psychological researchers have often focused on a subclass of social media known as social network sites (SNSs), due in part to their high levels of use (Guadagno et al. 2016). Such work frequently adopts boyd & Ellison’s (2007) definition, which describes SNSs as “web-based services that allow individuals to (1) construct a public or semipublic profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (boyd & Ellison 2007, p. 211). This early definition was later updated to highlight the role of networked communication, acknowledge the co-constructed nature of the profile, and call attention to the stream (Ellison & boyd 2013). Though this definition was originally developed to help SNS researchers synthesize across studies and distinguish SNSs from other social media channels popular during that era (e.g., blogs), some work does treat SNSs as representing social media overall or fails to distinguish between the two terms (see Carr & Hayes 2015).

Another definitional challenge stems from academic and colloquial associations between the technology itself (e.g., Facebook, the social media application) and the business entity responsible for its production (e.g., Facebook Inc., the company), which operates within a complex set of organizational, economic, political, legal, and cultural constraints. In recent years, technology scholars have shifted from discussing websites to acknowledging specific branded social media and technology platforms, highlighting the fact that these sites are created by industry entities with economic (and other) agendas and now encompass a broad set of services integrated within one another. The growth of what were originally websites (e.g., Twitter.com) and mobile applications (e.g., Snapchat) into sprawling digital architectures and platforms has numerous ramifications for society (e.g., Sujon et al. 2018), as well as for psychological researchers. For example, the synthesis of major platforms with other software (e.g., Facebook’s integration into Spotify) complicates the task of researching a given medium. Is a Facebook-based profile on Tinder best studied as a component of Facebook, Tinder, or a new hybrid medium? Likewise, the frequent acquisitions of emerging channels (e.g., Instagram, WhatsApp) by more established technology companies (e.g., Facebook Inc.) blur the perceived and actual differences between them as their systems become synchronized. While these industry changes may seem at first to be the domain of economists or computer scientists, corporate changes may influence user perceptions—and thus use—of the channels. Hence, a social media platform is much more than an online brand, even though the major social media platforms may be strongly tied to their public branding (e.g., logos, products, promotions, etc.) among users and societies. In sum, the dynamic nature of online platforms results in dynamic understandings of how best to define social media.

Social Media Elements

The tendency of researchers to concentrate on SNSs such as Facebook (see Rains & Brunner 2015, Stoycheff et al. 2017) likely reflects bias toward the largest platforms, as well as the clear difficulty in categorizing a comprehensive set of social tools in a cohesive manner (cf. Carr & Hayes 2015). A growing number of perspectives have called attention to the risk in overgeneralizing findings

from studies on fleeting sites, apps, and/or platforms (e.g., Carr & Hayes 2015, Fox & McEwan 2017, Stoycheff et al. 2017). As such, concerns about the long-term replicability of technology research have invigorated the discussion of more robust approaches for tackling the moving-target problem. Although there is no foolproof solution for overcoming the fundamental issue—the fact that specific features are bound to be elevated or eliminated—some approaches have proven useful to social media researchers.

An affordances approach may help researchers synthesize findings across studies, time periods, and specific social media platforms. Such perspectives call attention to the perceived uses, or affordances, of an artifact rather than its technical or physical features (DeVito et al. 2017, Evans et al. 2016, Fox & McEwan 2017, Treem & Leonardi 2013). Affordances (e.g., synchronicity of message exchange) thus provide a flexible way of characterizing the object of study (e.g., Apple iMessage), while also allowing for comparisons across objects (e.g., Facebook Messenger) independent of the historical moment. So even when a photo-sharing platform changes over time, insights related to its core affordances—such as persistence, or the degree to which the channel saves content by default—remain relevant and comparable to future research. By focusing on high-level attributes that transcend specific technologies when examining social media uses and outcomes, insights from studies of one platform can be understood in the context of other media that share the same affordances (Ellison & boyd 2013).

As with most research strategies, however, the affordances approach comes with some limitations. Most notably, it can be challenging to capture the complete set of affordances that comprise a given social medium or to clarify what makes social media distinctive (Carr & Hayes 2015), especially given individual differences in users' perceptions of online social interaction (Clark & Green 2018). Hence, the abstract nature of affordances, combined with the complexity of social media, may require numerous (and potentially unique) affordances to realistically describe how users perceive a single channel in meaningful ways. Furthermore, it can be difficult to examine one affordance when this affordance is always accompanied by others within the virtual environment. Sometimes naturally co-occurring factors can be disentangled through creative research design (e.g., Walther et al. 2011), but often these affordances are confounded empirically (Fox & McEwan 2017). Finally, given their emphasis on conscious perception, affordances are not well suited to capturing dimensions of behavior that rely on more automatic and unconscious forms of cognition (Bayer & LaRose 2018). Altogether, it can be difficult to reconcile the abstract affordances of social media with the way users understand platforms in practice. Such obstacles likely contribute to the common focus on well-known platforms, which allows researchers to examine effects tied to broad contexts (e.g., Facebook) about which users have a shared understanding—even if those contexts are unstable.

Another approach for examining the psychological implications of social media over time is to examine the core components, or elements, that users understand, navigate, and engage with regularly. As described above, three elements have been used to define SNSs in the past: the profile, the network, and the stream (Ellison & boyd 2013, Ellison & Vitak 2015). The three elements of SNSs do not constitute the full spectrum of social media experiences, but they shape how users (and researchers) think about social media at large. In other words, these online spaces contribute to the set of expectations, schemas, and scripts that individuals draw on when making sense of social media. Elements, in turn, have provided a foundation for researchers to conceptualize and measure social media across various platforms. Compared to affordances, elements are rooted in how users approach and operate social media in practice. That is, elements demarcate the building blocks of social media environments in a manner that aligns with everyday perceptions, prioritizing ecological validity in combination with the basic features and affordances described above.

Message:

a social media element allowing users to engage in directed social interaction using text, video, photo, or other media

Social media element:

an established component of the social media ecosystem that is understood through a common set of features and affordances across different channels

Here, we treat a social media element as an established component of the social media ecosystem that is understood through a common set of features and affordances across different channels. Going beyond affordances, elements encourage researchers to move away from gross measures of overall use (e.g., total time) and toward a tool kit approach specifying what sets of features individuals leverage to accomplish various goals (Smock et al. 2011). A social media element, such as a profile, is not a single affordance or feature. An element contains a predefined combination of affordances and features but is not tethered to a particular platform: That is, individuals have expectations for what a profile is, regardless of whether they have one themselves and independent of which platforms they use. A profile has salient features and affordances that help to characterize it, yet it is still understood as a discrete object that appears across different social channels. In the next sections, we review the links between key elements and social psychological effects, displaying how certain online contexts complicate the ways in which established processes occur.

EXPLICATING SOCIAL MEDIA

Below, we delineate and describe four elements of social media, as well as notable features and affordances linked to them in past work. We draw our first three from Ellison & Boyd's (2013) definition of SNSs: the profile, the network, and the stream. The fourth element, the message, is another critical and central component of the social media ecosystem that has not been explicitly considered in past definitions. Indeed, messaging is now the social backbone of many social media platforms, often serving as a "backchannel" (Ling & Lai 2016) to circumvent the challenges of larger social groups. For each coupling, we provide a brief review of research connecting an element to an effect, spotlighting a key challenge that appears for social media users as a consequence. Nonetheless, our review should not imply that all social media platforms include these four elements, nor that these four effects are the only important social psychological processes to consider for a given element.

Beyond reviewing links among the four elements and their effects, the sections below discuss how social media challenge our understanding of basic psychological processes. In other words, by displaying how an established process occurs in a novel environment, social media reveal how effects diverge as a function of context and locate factors that researchers take for granted when studying classic contexts. For example, the contrast between sharing content on more permanent (e.g., Facebook) and more ephemeral (e.g., Snapchat) platforms can demonstrate how cognition depends on certain dimensions of the social interaction context (e.g., temporal persistence) that are underappreciated when focusing on face-to-face environments. For each section, we reconsider how the link between a particular element and an effect (inadvertently) uncovers a meaningful contextual factor. In this way, elements serve to identify the overlooked mechanisms and moderators that guide how psychological processes operate in daily life. For these reasons, the moving-target problem should not be viewed as a methodological issue alone; rather, the contexts that emerge, and reemerge, across platforms provide the opportunity to sharpen the contours of psychological theories.

The Profile Element

The profile serves as the audience-facing digital portrait of each user, allowing individuals to display information about themselves in a personalized space. Common features of the profile include personal photos, written bios, background images, and past statuses that the user posted. The affordances of visibility, persistence, and audience transparency are critical for understanding self-presentational dynamics within the profile. Visibility refers to the extent to which social

media “enable people to easily and effortlessly see information about someone else” (Treem & Leonardi 2013, p. 150). Visibility is typically managed via privacy settings, which are determined by the self-disclosure practices of each user and shape the “imagined audience” for each post (Litt 2012). Persistence refers to the extent to which content is viewable after posting (DeVito et al. 2017, Treem & Leonardi 2013) and has implications for the imagined audience of a particular post. “Back-stalking,” for instance, is a practice in which older social media content is resurfaced, sometimes to the chagrin of the original poster (Schoenebeck et al. 2016). Finally, audience transparency refers to the extent to which the actual audience of a particular piece of social media content is apparent. Many social media platforms have low transparency, offering little to no information about who has seen a post (DeVito et al. 2017).

The profile and self-presentation. Self-presentation refers to “the process of controlling how one is perceived by other people” (Leary 1995, p. 15). In his foundational work, Goffman (1959) highlights the performative aspects of quotidian self-presentation, describing how individuals offer a customized version of the self, tailored to a specific audience at a specific time. In offline settings, individuals manage their self-presentation through spoken words as well as many other cues such as tone of voice, facial expression, and clothing (e.g., wearing a business suit to a job interview). Similarly, we engage in self-presentational practices when we create profiles, but their asynchronous nature and high editability enable selective self-presentation, giving users extra control over various cues by rewriting descriptive text or selecting one photo from among many (Walther 2011). Self-presentational performances on profiles, however, can be challenging in that content is persistent (unlike the spoken word) and thus not confined to a specific audience. Revisiting Goffman’s performance metaphor, Hogan (2010) argues that self-presentations on social media should be viewed as exhibitions, where users provide artifacts but the display of them is curated by someone else. Regardless of how content is selected, profiles allow—and at times demand—careful self-presentation of the user.

Selective self-presentation can also be a slippery slope to embellishment or outright lying. Certain online contexts give users more freedom to engage in deceptive self-presentation, such as providing the option to mask identity characteristics that would otherwise be apparent. One domain in which self-presenting on profiles is particularly important is online dating, because decisions to meet offline or pursue the relationship are often made on the basis of the profile (Finkel et al. 2012). Research comparing online dating profiles to offline characteristics has found that the majority of profiles contained a discrepancy in one of three measured characteristics (age, height, and weight), though the degree of the discrepancies was quite small (Toma et al. 2008). Hence, similar to wearing a flattering outfit for a first date, profile enhancements can be seen as a way to put one’s best foot forward, rather than lying (Ellison et al. 2012).

One significant factor that influences the extent to which users engage in deceptive self-presentation is the presence of an audience of friends or contacts (Hall & Pennington 2013). As described by warranting theory (DeAndrea 2014, Walther 2011), the less control users have over a piece of information about themselves, the more that information is viewed as credible. In one test of the theory, participants gave more weight to comments from users’ friends regarding their extroversion and appearance than to their self-reported profile (Walther et al. 2009). Given these reasons, users may be more truthful in SNS profiles than in online dating profiles, where the presence of a shared audience could call attention to misrepresentations. The persistent nature of many posts also acts as a deterrent to deceptive content, with research finding that people lie less in recorded media, presumably due to the digital paper trail (Hancock et al. 2004). Some online daters have even reported saving early correspondence to check against later statements (Heino et al. 2010). As a result, self-presentational concerns may be lower on ephemeral platforms like

Snapchat (Bayer et al. 2016c), though temporary sharing may still leave negative impressions on others (Hofstetter et al. 2017).

In many ways, the parallels between online and offline self-presentation should not be surprising, given that online tools are used by individuals who presumably have the same goals, motivations, and habits irrespective of channel. In turn, research suggests that expressions of personality are also comparable on and off social media, echoing early findings on the accuracy of personality perceptions based on personal web pages (Vazire & Gosling 2004). For example, Facebook profiles reflect the actual, rather than the idealized, personalities of their users (Back et al. 2010). In particular, social traits such as extraversion often manifest in terms of observable cues, suggesting that certain aspects of personality will appear reliably via online profiles (Gosling et al. 2011). Other work shows that observers can detect levels of impulsivity and self-esteem from just 10 tweets (Orehek & Human 2017) and that personality can be predicted from the text records of Facebook statuses (Park et al. 2015), signaling the magnitude of personality traces on profiles.

Key challenge: authenticity. The balancing act of selective self-presentation underscores the challenge of accurately presenting oneself, or achieving authenticity, via social media. Bazarova & Choi (2014) showed that social validation, whereby people seek social approval and acceptance, was the most common motivation behind Facebook posts, mirroring the broader need to self-present evident on Facebook (Vogel & Rose 2016). For some users, this motivation translates into safe, socially desirable profile presentations that are bland enough for everyone in the network (Hogan 2010). Compared to emotions expressed via private channels on social media, those broadcasted widely tend to be less intense and more positive (Bazarova et al. 2015). More generally, authentic self-presentation on social media may help individuals reap emotional rewards or online support (Kim & Lee 2011, Reinecke & Trepte 2014), and some research suggests that profiles may serve a self-affirming purpose for users (Toma & Hancock 2013).

Nevertheless, authenticity does not ensure positive outcomes for all users or all types of posts. For instance, Jang et al. (2018) found that individuals with high self-esteem, but not those with low self-esteem, experienced greater happiness when engaging in more honest self-presentation. Likewise, other studies suggest that only some users—in particular, those with higher well-being already—benefit from being authentic online (Forest & Wood 2012, Reinecke & Trepte 2014). Moreover, people deliberate about whether to share difficult events or negative topics on social media due to platform norms (Buehler 2017). Yet such calibration can be very challenging, given that individuals have different ideologies toward social media (Haimson et al. 2018) and do not always gauge accurately how others may perceive their disclosures (Wang et al. 2016).

Altogether, profiles operate as a storefront for the self, requiring a careful balance between selective and authentic self-presentation. Some work finds that viewing one's own profile can function as a source of self-affirmation or higher self-esteem. Other work suggests a rich-get-richer phenomenon in which only certain forms of authenticity reap rewards, such as those expressed by people who already have high self-esteem. More broadly, profiles help to reveal how self-presentation functions in an environment in which, contrary to face-to-face interaction, versions of the self can endure over time. In this way, profiles massively expand the potential audiences for social interactions in ways that users may lack mental models to comprehend (except when adopting features like expiration timers). The profile thus illustrates the importance of persistence, and the counterforce of ephemerality, in guiding self-presentation dynamics in daily life. More research will be needed to examine how individuals perceive, and represent, their selves over time, especially given the extent of social behavior that is now searchable. Looking forward, the persistence of social interaction contexts will continue to act as a pivotal moderator for self-presentation processes, on and beyond social media.

The Network Element

The network—such as friends on Facebook or contacts on LinkedIn—provides the interface for engaging with the catalog of accounts (people) that users are connected to on social media. Prominent features of the network include contact lists, (un)follow preferences, and account tagging. Networks are linked to affordances such as pervasiveness (the ability to quickly and constantly communicate with a variety of ties), searchability (the ability to search for information and people), and association (Fox & McEwan 2020, Treem & Leonardi 2013). Most importantly, the association affordance allows users to create, view, and traverse ties between individuals, or between individuals and content (Treem & Leonardi 2013). In SNSs, network connections are visible to others by default (e.g., a page listing other connected accounts)—a key feature of SNSs that shaped their evolution and the social practices that unfold on these platforms (boyd & Ellison 2007). However, on other platforms these may be hidden. Two common connecting mechanisms are one-way (e.g., following on Twitter) and mutual (e.g., friending on Facebook). In either case, connecting on social media platforms typically offers the same designation (e.g., friend, follower, or contact) to a wide range of relationships, ranging from family members to next-door neighbors, leading to very different interpretations of what a “friend” represents.

The network and social mobilization. People typically connect to others they already know on social media, often using these digital connections to reflect preexisting face-to-face relationships (Hampton et al. 2011). Early work on Facebook, for example, showed that college student users were more likely to use the platform to maintain existing friendships as opposed to meeting new people (Ellison et al. 2011). Similarly, most connections on Facebook belong to categories of people known from other face-to-face contexts, such as extended family or coworkers (e.g., Hampton et al. 2011). This flattening of all contacts into one audience can challenge self-presentational strategies. In offline settings, people can target specific subsets or clusters of their social network through structural features like shared locations (e.g., church, classroom) or shared temporal situations (e.g., wedding, date). By comparison, network components allow (or force) users to broadcast messages to their complete set of social circles at once.

This ability to broadcast to personal networks has meaningful implications for social capital accrual (Ellison et al. 2014). Social capital describes the resources individuals access through their personal relationships, usually subdivided into two types: tangible or emotional support (bonding social capital, associated with strong ties) and exposure to novel worldviews or information (bridging social capital, associated with weak ties). Early research suggested that Facebook facilitated the development of social capital, especially bridging social capital (Ellison et al. 2007). Further investigations showed that people who use Facebook to look up casual acquaintances in their network (as opposed to complete strangers or close friends) report higher social capital (Ellison et al. 2011). Longitudinal research has revealed similar findings: Users with lower social fluency report higher bridging social capital over time, suggesting that Facebook behaviors can reinforce their weaker relationships (Burke et al. 2011). A recent meta-analysis further affirms these findings, with bridging social capital displaying a moderate positive relationship with general SNS use (Liu et al. 2016). More specifically, using SNSs to seek information and to maintain relationships were the two activities with the strongest associations to bridging social capital. Combined, these findings suggest that Facebook is well suited for enabling communication and relational maintenance with weaker ties.

In a similar vein, numerous studies have shown that social media use is linked to perceived social support (Liu et al. 2018, Lu & Hampton 2017) and sometimes reduced loneliness (Deters & Mehl 2013). In accordance with the findings concerning social capital, one early study found that

students with more maintained connections (e.g., high school friends) reported finding higher utility from Facebook for soliciting social support (Manago et al. 2012). More recent studies have demonstrated that such network engagement is not only associated with more support but is also linked to faster support. In one study using digital trace data from Facebook, receiving more and faster responses to Facebook updates predicted higher levels of perceived support and lower loneliness (Seo et al. 2016). Correspondingly, Lampe et al. (2014) found that broadcast Facebook messages with direct requests for help received more comments in response, and these responses arrived sooner. As bolstered by another recent meta-analysis (Liu et al. 2018), the current state of research suggests that SNS use is positively associated with emotional and informational network support.

Key challenge: loneliness. Although ample evidence now exists regarding the social resources garnered via network engagement on social media, people seeking support may still encounter hurdles or negative social outcomes. For instance, the flattening of diverse ties into one communicative episode can engender context collapse (Marwick & boyd 2011), making it difficult for users to craft messages that achieve diverse self-presentational and interpersonal goals. One strategy for managing this problem is posting only mundane content (Hogan 2010), but this may also limit the opportunities for support by eschewing sensitive disclosures. Indeed, there may be a reluctance to respond publicly to posts expressing negativity on social media, thus exacerbating loneliness (Forest & Wood 2012). Further supporting this idea, some research suggests that, for strong ties, people may be less willing to comment publicly on posts expressing need for social support. Alternatively, for weak ties, even if the negative posts express social support needs, individuals may be more reluctant to respond at all (Ziegele & Reinecke 2017).

Even if users reach out and receive responses, however, support signals can be of questionable social value (Burke & Kraut 2016). The ubiquitous one-click responses such as the “like” button on Facebook or the “upvote” button on Reddit represent salient examples, as these responses may originate from a variety of motivations (e.g., social obligation) independent of the post itself (Sumner et al. 2018). When people perceive “like” responses as coming from those with more “automatic” liking behavior, they perceive them as lower in social support value (Carr et al. 2016). Furthermore, requests for social resources may fail to receive the desired number of responses (Hayes et al. 2018). French & Bazarova (2017) showed that people expect variable levels of responses depending on their network characteristics. Hence, greater network diversity predicts higher expectations for responses on Twitter and Instagram (yet not Facebook), presumably due to platform norms (French & Bazarova 2017). Still other studies of network engagement have undermined the importance of number of likes or responses on perceived support and loneliness (Blight et al. 2015, Deters & Mehl 2013), further complicating the role of feedback.

In summary, networks offer new routes and signals for obtaining social resources. It is clear that people can capitalize on network-based affordances to flexibly solicit social support and social capital, though the extent to which this reinforces or reflects offline resources remains ambiguous. At the same time, certain forms of social resources—such as one-to-many self-disclosures and their one-click responses—may be too polarizing or limiting to provide lasting value. More generally, research on mobilization demonstrates how social media platforms now function as modern-day address books. Regardless of the total resources accrued, social media have revealed how network association (and navigation) is critical to the activation of social resources. As more features emerge that allow individuals to visualize and reflect on their network ties, along with their communication histories, the navigability of social interaction contexts is likely to increasingly shape the psychology of social mobilization.

The Stream Element

The stream—e.g., the aggregated flows of content seen on the home pages of Facebook and Instagram—acts as the center display for recent news about other accounts that users are connected to on a platform. Notable features of the stream include text statuses, post reactions, post comments, and suggested content or ads. Streams have often been associated with passive use as opposed to active activities (Verduyn et al. 2015); whereas the latter involve behaviors that leave visible traces (e.g., posting and commenting), passive use is defined by browsing and viewing. This dichotomy is increasingly being challenged, however (Triệu & Ellison 2018). For instance, one-click, content-free feedback such as likes can be viewed as a middle ground between active and passive use (Carr et al. 2016). Viewing streams depends on the affordance of asynchronicity, meaning there is a lag between the time posts are made and the moment they are received by users (Fox & McEwan 2017). The streams (or feeds) seen on Facebook, Twitter, and Reddit are notable for their high degree of perceived liveness and associated ephemerality (see Bayer et al. 2016c). Finally, given their extensive and extended display of content, streams also exhibit a high level of awareness, as users gain knowledge of other people or events in their network (Lu & Hampton 2017).

Social media effect:

a change in individual-level cognition or behavior that results from social media use

The stream and social comparison. A sizable body of research points to the existence of a link between social media use and social comparison processes. Social comparison theory (Festinger 1954) has remained a mainstay in psychological research for decades, and it is especially relevant to contemporary social media research (Greenwood 2017). More specifically, social comparison theory argues that “people evaluate their opinions and abilities by comparison respectively with the opinions and abilities of others” (Festinger 1954, p. 118). Streams, for their part, provide a catalogue of snapshots from other peoples’ lives, as well as the responses received from their network, that can naturally lend themselves to social comparison. As a consequence, a diverse literature has now evaluated social comparison effects on social media platforms, often clarifying its links to streams—albeit with some significant boundary conditions.

In 2012, initial evidence indicated that overall Facebook usage was associated with viewing others’ lives as better than one’s own life (Chou & Edge 2012). Subsequent research supported a direct connection between Facebook usage and negative comparison tendencies (Jang et al. 2016, Lee 2014), particularly among people who are less happy (de Vries & Kühne 2015). In addition, other studies have shown that these effects are especially salient for individuals who tend to compare themselves to others in general (Vogel et al. 2015, Wang et al. 2017). Combined, a wide body of research has now demonstrated that social comparison orientation acts as a pivotal moderator for comparisons (de Vries et al. 2018, Park & Baek 2018), affirming the power of individual differences in social media effects.

What drives the tendency to compare? By aggregating the shared experiences of users’ personal connections and providing a one-stop shop for browsing dozens of status updates, streams serve to summarize the highlights of others’ activities, thoughts, and stories. As suggested by the self-presentation scholarship highlighted above, the content that is pulled into streams often exhibits a noticeable positivity bias (Appel et al. 2016, de Vries & Kühne 2015). Streams also offer a novel space (compared to face-to-face contexts) for evaluating others’ behavior, with built-in opportunities to express those evaluations directly via likes or comments. The effects of social comparison can be further intensified if the target of comparison is someone similar to oneself but whom one does not know well (Chou & Edge 2012). This is because knowing a person well can help to contextualize their positive updates along with more neutral or negative aspects of their lives (Weinstein 2017).

As such, streams lend themselves to social comparison in a way that is similar to sitting outside in a public square, but with added features well suited for direct comparisons. Through likes, comments, and emotive reactions (e.g., Facebook's "funny" and "sad" reactions), individuals can officially declare their evaluations in ways that are quantifiable, and thus easily comparable, to both sharers and viewers. Citing this mechanism of quantifiable social influence, Sherman et al. (2016) showed that adolescents were more likely to give likes to photos when they were depicted as having many likes, as compared to those same photos with fewer likes. Participants also exhibited greater brain activity in regions associated with "reward processing, social cognition, imitation, and attention" while viewing photos with many likes (Sherman et al. 2016, p. 1027). Over time, then, these quantified reactions become an expected part of sharing, and yet another criterion to anchor social comparisons.

Key challenge: envy. Perhaps predictably, the upswing in attention to social comparison online has created concerns around the deleterious effects of upward comparisons. Even before social comparison was identified as a risk, studies detected a significant increase in negative affect when individuals engaged in passive interaction on social network sites (e.g., Wise et al. 2010). While early studies suggested that social comparison could act as a potential mediator for negative effects on emotional well-being, follow-up experiments confirmed a negative link between positive affect and passive use—an effect mediated by envy (Verduyn et al. 2017). Altogether, an impressive number of studies have identified envy as an outcome of Facebook use (Appel et al. 2016), with rising interest in Instagram and other platforms (e.g., Stapleton et al. 2017). Interestingly, envy seems to be driven more by experiences than material purchases (Lin et al. 2018). In other words, people feel more envy when seeing others post about going on vacation than about buying new things. After establishing a link between streams and comparisons, research has turned to evaluating how these processes play out in various domains, such as body image (Fardouly & Vartanian 2016) and parenting (Coyne et al. 2017).

In some situations, however, the generation of envy can have positive outcomes. Park & Baek (2018) found that either negative or positive comparisons could emerge, based on the social comparison orientation and the emotions triggered. Indeed, newer work has called attention to potential positive effects of comparison through benign envy, such as acting as a source of inspiration (Meier & Schäfer 2018). Finally, some work has noted the strong boundary conditions of negative effects due to comparisons. For example, Johnson & Knobloch-Westerwick (2014) found reduced negative effects of social comparison when participants were put into a negative mood first. Other research suggests that individuals feel more positive emotions in total when browsing Facebook (Lin & Utz 2015), and that social comparison effects may be specific to relative (versus overall) happiness (Chae 2018).

Together, streams can spotlight a seemingly endless catalog of exclusively positive moments from friends' lives, magnifying social comparison tendencies. While research describes how streams operate as a common space for social comparison, the broader implications remain debated (Faranda & Roberts 2019), including the extent to which social media comparisons are in fact different from offline behavior. Research to date has underlined the potential of social media comparisons to precipitate envy and negative affect, yet newer studies question whether all comparison tendencies are inherently negative. In addition to fueling envy, updates can also provide aspirational role models and greater awareness of significant activities in friends' lives, such as adverse events that necessitate empathy and community help. These types of intimate updates, once shared among close ties in private settings, can immediately reach more people. Streams show how the level of awareness of others' lives is interwoven with social comparison tendencies in daily life. With the rising curation of social environments and the widening set of feeds appearing

by default in online platforms (e.g., music streaming, location sharing, etc.), the extent of awareness in social interaction contexts will play a pronounced role in the quantity and quality of future comparisons.

The Message Element

The message was not always viewed as an element of social media, though it often existed in the background of classic SNSs (e.g., Facebook inbox, chat) and other communication technologies (e.g., SMS, texting). Messages have also been referred to as chat, texting, direct/instant/mobile messaging, and mobile email across different studies and periods. Moreover, stand-alone text messaging is sometimes treated separately from social media (Carr & Hayes 2015), perhaps due to its lack of broadcasting features. However, this emphasis on masspersonal features can overshadow the ways in which the message syncs to and supports other elements. The message may not distinguish social media from other forms of social interaction on its own, but it reinforces overall usage and supports tasks that require more privacy than is afforded by broadcasting. Modern messaging is linked to the affordances of privacy, portability, and asynchronicity (Fox & McEwan 2017; cf. Schrock 2015) and is associated with features such as message histories, typing cues, and read receipts. Given the growing inseparability of messaging and social media platforms (Mai et al. 2015), here we integrate the threads of messaging research to acknowledge its grounding as a social media element. The contemporary significance of messaging for social media is reflected in the rapid growth of mobile-first platforms, such as WhatsApp, WeChat, and Snapchat, as well as companion apps to SNSs such as Facebook Messenger. Therefore, we treat messages as focused interactions between two or more users using text and/or other media content, regardless of the platform or phone in hand.

The message and social connectedness. Social connectedness through social media can be viewed as an outgrowth of the human needs for belongingness and relatedness to others (Baumeister & Leary 1995, Grieve et al. 2013, Ryan & Deci 2000, Sheldon et al. 2011). These fundamental social needs help to explain why people use social platforms, just as they offer insight into why people pursue face-to-face interactions. Still, such perspectives do not clarify how individuals negotiate when and where to communicate if other people are always available to contact online (Reinecke et al. 2018, Triêu et al. 2019). The key difference, then, is in the permanence of possible social interaction afforded by online technologies, including social media platforms (Bayer et al. 2016a, Vorderer & Kohring 2013). As such, research tied to messaging has often adopted the nomenclature of “permanently online, permanently connected” (POPC) to describe the constant connectedness and associated psychological implications (Vorderer et al. 2018).

To be clear, an individual’s complete level of online connectedness, whether oriented toward online, offline, or mixed online/offline relationships, is determined by an array of communication technologies. Thus, many forms of networked communication (e.g., call, email, etc.) contribute to perceived social connectedness, albeit with substantial individual and cultural differences at play (Triêu et al. 2019). Moreover, some research suggests that online connectedness is perceived as separate from face-to-face connectedness (Grieve et al. 2013), and that Facebook users can feel connected and disconnected simultaneously (Sheldon et al. 2011), complicating the meaning of staying connected. That is, there are potentially many distinct thoughts of connectedness, relatedness, and belongingness toward other individuals happening at once. As Levy et al. (2001, p. 253) once noted, “People can simultaneously experience social acceptance or rejection in one or more kinds of relationships.” Social media thereby engender a number of new dimensions to feelings of connection and/or disconnection, all being experienced more or less concurrently.

Despite the many shades of connecting to others, research supports the centrality of messaging in shaping daily perceptions of connectedness (Kuru et al. 2017, Vorderer et al. 2016). Significantly, the ability to address a specific individual via a personal mobile phone number or a unique username provides the most fundamental driver of enhanced connectedness (Ling 2017). The always-on access of mobile messaging, as opposed to a Facebook or LinkedIn account, means that the potential for new social interaction is always there, leading to the development of social norms to be “on call.” These connection expectations allow individuals to reach out to their network the moment that something stressful occurs (Holtzman et al. 2017), with one study suggesting that simply having a mobile device buffers the effect of being excluded (Hunter et al. 2018). Conversely, the lack of a message response can threaten belongingness (Smith 2004), and research confirms that social media ostracism is just as impactful as face-to-face exclusion (Schneider et al. 2017).

Consequently, it is the potential to connect, perhaps more than the raw amount of social behavior, that underlies the psychological effects of messaging. Yet research suggests this focus on incoming messages is driven by a relatively small number of close ties (Ling et al. 2014). The online availability of close ties provides myriad opportunities for chatting in spare moments, with studies showing that self-disclosure through messaging can reinforce friendships and relational closeness (Carpenter et al. 2018, Valkenburg & Peter 2009). At the same time, constant opportunities to connect require constant negotiation, and more recent research has turned to investigating individual differences in how people attend to potential messages (Reinecke et al. 2018). The rising concern for connection preferences reflects the growth of unavailability signals such as message read receipts (Mai et al. 2015), adding even more dimensions to how connected individuals look and feel.

Key challenge: distraction. The development of permanent connectedness produces a quandary from a social needs standpoint. Social needs can now be satisfied at any moment, yet such capabilities can also facilitate social stressors that undermine need satisfaction (Ling 2017, Sheldon et al. 2011, Vorderer et al. 2016). In response to this issue, a number of studies have examined whether general Facebook use is associated with feelings of overconnection, disconnection, or overload (e.g., Chen & Lee 2013). LaRose et al. (2014) found that uncontrollable habits—rather than connection habits as a whole—were predictive of stress and “connection overload.” In extreme cases, enhanced connectedness may serve to exaggerate anxiety or problematic tendencies (Cheever et al. 2014), with some work suggesting that a small portion of users exhibit signs of behavioral addiction (see Bayer & LaRose 2018 for a review). By contrast, Sheldon et al. (2011) provided evidence that people who felt disconnected went to Facebook as a remedy and felt more connected as a result; however, people did not feel less disconnected after using the platform. Such findings reaffirm the idea that connectedness can be decomposed into different subparts of perception; in other words, people can feel connected and disconnected to different things in parallel.

Aside from feelings of overload and (dis)connection, messaging can interfere with other activities, for example, by undermining face-to-face conversations (Vanden Abeele et al. 2016), causing motor accidents (Bayer & Campbell 2012), or prompting users to procrastinate with regard to other goals (Schnauber-Stockmann et al. 2018). Amplified connectedness may also have unintended displacement effects, such as displacing potential social connection from nearby individuals when in public (Kushlev et al. 2017). As a whole, the displacement effects of social media remain contested (Hall et al. 2019), but they underline the ways in which messaging is now interwoven into offline contexts, as individuals weave in and out of immersive states automatically (Bayer et al. 2016b, Kuru et al. 2017). Well before the ascent of Facebook, Gergen (2002) coined the term “absent presence” to describe the parallel state of being physically here while mentally online, and messages continue to represent a prominent component of this sort of always-on absorption.

Overall, messaging is now cemented into our communication infrastructure. Ubiquitous online access to messaging means that people now have the possibility to connect directly with almost any individual in their social environment. This amazing level of connectivity entails both rewards (e.g., support of online others) and drawbacks (e.g., pressure of staying responsive). More research is needed to understand how different people balance this trade-off, and under which conditions the negative effects outweigh the positive ones. More generally, messaging has revealed the strength of availability in shaping how people feel connected or disconnected (or both) in daily social interaction contexts. Given the gradual growth of features such as online statuses, message reactions, and average response times, satisfying the need to belong in the future will require complex management of (un)availability signals.

MEASURING SOCIAL MEDIA

Social media researchers share a common challenge: studying an evolving set of tools, platforms, and practices that change quickly and dramatically, typically with little advance notice. This moving-target problem has clear implications for the investigation and replication of social media effects. In particular, these measurement issues echo concerns brought to the surface by the replication crisis, including the importance of contextual sensitivity (Pettigrew 2018, Van Bavel et al. 2016), as well as long-standing concerns around the historical durability of social psychological effects given their susceptibility to changes in culture (Gergen 1973). Although the (in)famous contention that social psychology could be viewed as history resulted in sharp debates in past decades (e.g., Blank 1988, Wallach et al. 1994), this conflict has largely subsided in recent years (Jost & Kruglanski 2002). Indeed, prominent frameworks now view culture as a constant force acting upon cognition (e.g., Oyserman 2015), and large-scale evidence has been amassed showing that social cognition moves with culture (e.g., implicit attitudes) (Charlesworth & Banaji 2019). Moreover, the notion that social psychological effects are subject to historical context factors is also less contentious—and more significant—when directed at the domain of technology (Greenfield 2017). In the sections below, we discuss ongoing measurement obstacles in the social media landscape, along with the unique opportunities these spaces offer for the coming years.

Historical Durability

Whereas many social psychological processes can be influenced by aspects of the historical moment, those tied to technology do so by definition. The famous Google effect (Sparrow et al. 2011)—the idea that individuals think of the Internet when facing hard questions and thus remember where to look (rather than the knowledge itself)—provides a cogent example of such contextual sensitivity. Specifically, Sparrow (2018) has argued that changes in historical context alter the meaning of Internet-based stimuli (e.g., words such as Yahoo and Altavista), undermining the ability to replicate the original effect with the same stimuli (Camerer et al. 2018). Social media platforms, for their part, are thus strongly susceptible to these changes, as suggested by past reviews of social media effects (Fox & McEwan 2020, Valkenburg et al. 2016) and Internet psychology (Gosling & Mason 2015).

This historical complication is especially salient when researchers attempt to measure social media contexts (cf. McFarland & Ployhart 2015). Indeed, social media platforms likely represent a varied mixture of virtual environments (e.g., the profile interface page) and mental frames (e.g., imagining which friends will see profile changes) that operate as momentary contexts. As a result, defining the contexts associated with online technology behavior remains difficult when specifying psychological mechanisms (Bayer & LaRose 2018). Previous research has commonly attended to

core elements such as those reviewed above (profiles, networks, streams, messages). To provide a durable foundation for establishing effects, these elements should characterize an online context (or set of contexts) that can be replicated over time, at least when clearly defined and measured. Despite the utility of conducting research around these and other potential elements, a number of obstacles threaten their contextual stability over time. Specifically, frequent alterations to the features of a given platform can modulate the affordances and practices of the associated contexts. Likewise, expected gratifications from use are likely to sensitize (or desensitize) perceptions of features and affordances over time.

Furthermore, social media norms can shift over time, with the potential to render prior psychological effects null as users adjust their behavior accordingly. For instance, the positivity bias norm regarding social media content may decrease if secondary profiles or “finstas” (fake Instagram profiles that display less curated content than real ones) become more common, lowering the frequency of upward social comparisons. Indeed, Gergen’s (1973) original article on historical durability specifically noted that social comparison is a process that is foreseeably wed to culture. Alternatively, norms may shift as the population of users changes over time, particularly given the overrepresentation of highly active users on many platforms (Park & Macy 2015). Similar to the classic physical contexts that characterize human social life (coffee shops, city squares, etc.), social media contexts are subject to numerous changes, though potentially at a faster rate due to their regular technical updates and irregular user bases.

As a whole, social media research encounters a complex constellation of moving parts that can inhibit context durability. In doing so, however, this area of research helps to uncover the contextual borders of social interaction at large, contributing to the revitalization of context in psychology (Pettigrew 2018, Tamir & Hughes 2018). As discussed above, social media have served to highlight the special significance of persistence (via profiles), navigability (via networks), awareness (via streams), and availability (via messages) for how social psychological processes function across online and offline spaces. These dimensions, along with the affordances and features composing the elements, will continue to define the social interaction contexts of the future. Social media research thereby assists in clarifying the contours of social psychological mechanisms, turning the moving target into a helping hand.

Researcher Control

On many platforms, empirical social media research is complicated by the fact that each user has a unique experience with every login, making it difficult to design studies that maintain internal and external validity. Numerous factors influence the user experience of a given individual, including dynamic algorithms, network composition, and personal settings. These factors can act as third variables in correlational research and sometimes interact with experimental manipulations in inexplicable ways. For example, in contrast to earlier iterations in which social media streams displayed content to users in predictable ways (e.g., reverse chronological order), contemporary platforms often use algorithmic logic to determine user feeds at each moment. Factors influencing streams include the composition of one’s network, targeted commercial content, the actions of other users who have previously seen the post, and dozens of other variables, many of which are in a state of constant and dynamic flux. Unsurprisingly, the specific conditions of these corporate algorithms are obscure.

This variability can make studying specific elements of social media particularly challenging. For example, researchers examining the effect of profile posting also need to monitor and account for the responses (e.g., comments, likes, shares) participants receive on the posting (Deters & Mehl 2013). In many cases, attempting to manipulate or control what a participant experiences when

they log in is simply impossible. Adding to the complexity, users may struggle to accurately report their technology use; for instance, Junco (2013) found that users were not able to accurately report Facebook time on site, which makes it unlikely that users can accurately report more nuanced activities. Moreover, accurately capturing the kinds of experiences that individuals have in these hyper-interactive and hyper-personalized media venues can be challenging. To cite one example taken from above, the effects of browsing different streams may lead to different emotional outcomes due to mechanisms like social comparison. However, this can also be a recursive process: Users may develop different expectations based on past experience, which then shape how they are motivated to use the platform. All of these obstacles combine to undermine validity.

Researchers who need participants to view tightly controlled content have a few options, all with limitations. One option is fabricating fake content to present to users, as done by Walther and colleagues (2009). Though promising, such approaches sacrifice ecological validity and often do not enable researchers to test the effects of how users respond to content from their actual network connections. Another approach is designing studies in ways that merge the benefits of logged data and traditional psychological methods (e.g., surveys, experience sampling, implicit measures), which of course introduces added technical hurdles and limitations (e.g., Bayer et al. 2018). A final alternative is creating mock interfaces or social network sites (Difranzo et al. 2018), generating a universe of fake accounts that interact with one another and then placing participants into these systems as users. By comparison, researchers that are affiliated with or work for social media platforms have more control over user experience and access to granular server-level usage data, but these interventions and data sets come with their own methodological limitations.

Aside from these practical challenges, researcher control can also engender ethical dilemmas that are germane to psychological work. Studies collecting social media traces must consider risks to participant privacy in ways that diverge from traditional social science research. Further, many psychologists embedded in tech companies now have the ability to manipulate the daily experiences of users and access highly sensitive user data (Bond et al. 2012). Hence, their involvement in research has inspired heated discussions on the ethics of research in social media environments. Most (in)famously, Facebook researchers manipulated the streams of approximately 600,000 users to show either more positive or negative posts in order to assess the influence of the emotional valence of the stream on the valence of users' posts (Kramer et al. 2014). Though similar experimental adjustments (known as A/B testing) take place across industry research, the lack of explicit informed consent and/or participant debriefing and the lack of awareness around how algorithms work (along with extensive press coverage) resulted in a large-scale controversy.

Elements

In spite of the dynamism of social media, the existing research tied to profiles, networks, streams, and messages displays some persistent patterns. The past focus on the well-known elements of SNSs, therefore, likely reflects the utility of outlining the common online spaces that comprise social media. Similar to affordances, elements help to provide contextual scaffolding for measuring social media effects over time. Undoubtedly, social media will continue to iterate in ways that prevent the compilation of a static set of online spaces. Yet by defining the central spaces of the social media ecosystem, along with the contextual boundaries of those elements, future research will be better able to replicate effects over periods and channels. In parallel, emerging research can extrapolate the findings from one platform to other platforms, while maintaining higher ecological validity than the affordances perspective alone. This type of extrapolation already happens in some arenas; for example, early research on how users experienced self-presentational pressures when creating online dating profiles (e.g., Ellison et al. 2006) contains insights that are applied to explorations of Tinder profiles or LinkedIn profiles in the contemporary ecosystem.

Social media

ecology: a unique set of interaction tools used to meet personal communication goals, including social platforms, face-to-face exchanges, and other channels

In other cases, social media elements may change in ways that make past psychological findings obsolete. Consequently, future research may benefit from identifying inventories of elements as well as criteria for inclusion and exclusion of elements across time. A given social platform can be defined by the constellation of elements that characterize it, and subclasses of social media (e.g., SNSs) can be distinguished through their unique set of elements (e.g., profiles, networks, streams). For instance, the ability to form a group chat, and thus interact in a group message context, could be viewed as an element due to its role in Facebook, Snapchat, or WhatsApp, even if Twitter does not support group chats at this time. Likewise, even when a platform is decommissioned (e.g., AIM), findings linked to its elements can be compared to future channels (e.g., WhatsApp) that share characteristics within the same element. When clearly defined, elements can provide more concrete methods for contrasting mediums with one another, and support empirical opportunities such as meta-analyses. In this way, researchers can investigate how social media elements emerge and evolve, chronicling the definitive social interaction contexts (and their effects) that wax and wane over time.

Altogether, in line with affordances approaches, elements mitigate the constant need to define social media across eras of human communication. Ultimately, some degree of integration is necessary if research on social media aims to identify replicable social psychological effects. The four elements underlined in this review are only a portion of the common components distributed across the social media landscape today. Elements offer one way of organizing the complex assortment of channels and platforms into replicable units, yet they also come with limitations, including their dependence on the wider social media ecosystem.

Ecologies and Effects

Thus far, we have treated social media channels as discrete environments that may or may not share particular features, affordances, and elements. Social media, however, do not exist in a vacuum. Rather, the collection of possible channels now represents a diverse ecosystem with an elaborate landscape of social roads and roundabouts within and between platforms. Each platform can be used in combination with other channels as well as other social media platforms (Boczkowski et al. 2018). Within this total ecosystem, each user selects a set of tools that are employed together to meet their communicative goals—i.e., to create a customized social media ecology. Given the simultaneous and synchronized use of numerous channels today, the implications of social media behavior are best understood when accounting for the personalized ecologies of users (Zhao et al. 2016).

Emergent research suggests that the distinct set of social tools will vary considerably as a function of the specific user. Hence, more work is needed to examine individual differences in how users conceptualize social platforms as well as their underlying components across channels. For example, understanding how individuals explicitly or implicitly compare platforms may help to clarify how users navigate their social media ecologies (Boczkowski et al. 2018, Tandoc et al. 2019, Triêu & Ellison 2018). Prior research also suggests that the effects of social media depend on how people approach online contexts. For instance, recent studies have examined how folk theories (DeVito et al. 2018) and individual expectations (Clark & Green 2018) guide the ways in which users approach social media and perceive online communication. More empirical research is thus needed to map the mental models of ecologies, investigating what elements help to define and distinguish the platforms from one another. Along the way, research can test whether individual differences in ecology perceptions shape the processes and outcomes of social media use.

At the same time, the surge of customized ecologies creates new obstacles to testing social media effects. First, media ecologies result in measurement challenges as discrete channels are

confounded with one another in colloquial language and personal schemas. Does “Facebook” refer to separate parts of the perceived ecology (e.g., newsfeed, messages) or to the entire platform? Second, the complexity of the social media ecology and the interweaving of online interaction into everyday life generates an increasing range of contexts to compare against one another to test an effect. Perhaps unsurprisingly, the most established way to conceptualize a social media effect is to compare it to another interaction channel. In early CMC studies, the anchoring point was generally assumed to be face-to-face contexts (Kiesler et al. 1984, Walther 2011). However, Valkenburg et al. (2016, p. 329) note in relation the changing landscape that “these developments have made it more difficult, and sometimes less relevant, to compare specific CMC applications with each other or with face-to-face communication.”

The diversifying ecosystem raises fundamental questions around how to define social media effects in the future. Although the default tendency to compare the psychological effects of social media to offline contexts is valuable (e.g., Faranda & Roberts 2019, Orben & Dunbar 2017), comparison choices are becoming less clear as online contexts from Facebook to Tinder intermingle with face-to-face (and with one another). Indeed, each channel—or element—that is added to a media ecosystem creates more potential contexts, and thus analytical comparisons, for finding a significant effect. The current social media literature already includes idiosyncratic combinations of measured channels across studies, inhibiting the ability to aggregate findings and perform meta-analyses about psychological mechanisms. As with the need to define the contexts themselves, the growth of ecologies necessitates more precise justification and discussion of the contexts selected as theoretical comparison points.

Going beyond best practices for social media research methods, the definition of comparison points can also shape the societal implications of their effects. As in other areas of social science research (e.g., behavioral interventions) (Wang et al. 2018), there is a range of possible comparisons one could specify as the control. For instance, studies can compare the effect of social media use to other leisure activities (e.g., jogging), media hobbies (e.g., virtual reality), or diet behaviors to justify their significance (Orben & Przybylski 2019). In doing so, policy makers can arrive at different conclusions about the social psychological effects of social media, depending on the chosen reference point. None of the above comparisons are inherently wrong—i.e., we need to examine social media effects against something—but they nonetheless have the potential to reveal different narratives about technology over time that may (or may not) warrant societal alarm in the present (Orben & Przybylski 2019).

REMEMBERING SOCIAL MEDIA

This review has described some of the pivotal social psychological effects of social media, while also reflecting on the challenge of defining them. The moving-target problem will continue to complicate researchers’ (and users’) attempts to organize the organic evolution of social interaction into clean categories. At the same time, the culturally driven effects that are displayed on social media help to articulate the role of context for a growing set of psychological effects. Social media have served to diversify, or at least spotlight, the variability in contexts that humans inhabit in everyday life. Moreover, the rapid pace of changes is forcing researchers to reconsider the historical nature of psychological effects. The apparent obstacles, therefore, are in fact fast-tracking research to more replicable approaches. From challenging the definition of contexts to revealing the hidden moderators of social interaction, social media research will likely become more central to psychology with each new update (Kross 2017).

Fifty years from now, the tweet may be akin to the telegram: an odd anecdote or appropriation of a bygone behavior, as seen today in the popular message app Telegram. Few researchers

would be naïve enough to predict what technologies await us next. Even fewer researchers would predict the longevity of findings around a platform as ephemeral as Snapchat. Given this scientific transience, the contribution of social media research to social psychology can appear fleeting. We disagree. Despite the unique trials that come with social media platforms, we are optimistic about their potential to reveal novel insights into psychological mechanisms. By attending to the elements that ground the social media ecosystem, the effects of today will be better positioned to anchor those of tomorrow.

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