Communication Theory ISSN 1050-3293

ORIGINAL ARTICLE

Connection Cues: Activating the Norms and Habits of Social Connectedness

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Staying "connected" has become a societal norm and a personal habit. The goal of this article is to explain how individuals internalize—and activate—social connectedness during daily life. As such, we take a sociocognitive approach to integrate perspectives on implicit societal expectations (connection norms) and automatic individual behavior (connection habits). Based on this framework, we present a model for how nonconscious "triggers" to check a mobile device, or connection cues, affect the flow of communication. The model outlines types of connection cues, factors that moderate sensitivity to connection norms, and activation paths for connection habits. Altogether, connection cues determine when and where individuals "connect" through automatic perception.

Keywords: Triggers, Mobile, Checking, Conscious, Automatic, Time, Space.

doi:10.1111/comt.12090

Countless research articles begin with statistics on the prevalence of communication technologies in the world. Certainly, the counts of messages, calls, photos, posts, tweets, and snaps are astounding—and we could list them once again. But the tendency to start with emphasis on mere frequency obscures the manner through which those same behaviors are performed. Here, we attempt to move past frequency of use by theorizing *how* individuals connect through more conscious (i.e., deliberative) and less conscious (i.e., automatic) forms of use. Our central goal is to illuminate *connection cues*—nonconscious triggers to check a mobile device—as a way of explaining the role of social connectedness in daily life.

Our endeavor follows a period of transition in the study of social connectedness and mobile communication. We have moved into a stage where mobile technology has not only reached saturation in terms of ownership, but also become a basic element of social life (Campbell, Ling, & Bayer, 2014; Jacobson, Mortensen, & Cialdini, 2011; Rainie & Wellman, 2012; Taipale & Fortunati, 2014). For most, connecting through mobile media has matured as a social practice. Once it was an awe-inspiring and life-changing form of interaction. Today it is a basic assumption.

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At the societal level, mobile communication has worked its way into the social structure of everyday life in a manner that is comparable to mechanical time keeping and automotive transportation (Ling, 2012). Mobile communication is now part of our daily activity as members of groups, networks, organizations, and civilizations. It has become irreversibly interwoven into the flow of social life. Even its technological infrastructure, including cell towers, antennas, and data networks, is increasingly "invisible" within our society (Farman, 2014). At the individual level, mobile communication has also worked its way into the mental structure of everyday life. Along with IDs, keys, and currencies, the mobile device has become a core part of the "kit" that is necessary for contemporary life (Farman, 2012; Ito, Okabe, & Anderson, 2010). This movement into the backyard of both societal and personal life calls for new theoretical efforts explicating how social structure and media cognition intersect, along with the consequences for individuals and their relationships (Burchell, 2015).

Overview

The current article begins with the assumptions that connecting to others through mobile media now rests on a foundation that includes strong societal expectations and strong personal habits. This is not to suggest that all mobile media behaviors are nonconscious[1], as much of online communication remains in a state of social negotiation (e.g., visual communication; see Bayer, Ellison, Schoenebeck, & Falk, 2015). Nevertheless, mobile calling, messaging, and checking have reached a mature stage of adoption, practice, and experience (Campbell et al., 2014). We focus on mobile technology because of its profound impact on the daily practice of staying connected. We concentrate on checking behaviors, in particular, given their high degree of embeddedness. Of course, other communication technologies also contribute to the contemporary state of connectedness, and we are optimistic that future theory will extend our framework to "personal communication systems" (Boase, 2008).

In sum, this article represents an attempt to map how societal expectations to be connected, are *activated* through media cognition, and thus follows other integrative approaches to understanding technology at the sociocognitive level (e.g., Fortunati & Manganelli, 2007; Orlikowski & Gash, 1994). First, we review theory on the ways in which mobile media have contributed to shifting perceptions of societal expectations in society. Second, we describe the defining dimensions of cognitive habits and discuss how these automatic mechanisms manifest through certain cues. We then draw on sociological theory related to internalization and psychological theory related to societal norms in order to link this dual framework. We present a sociocognitive model of connection cue activation. The model outlines types of connection cues (technical, spatial, mental), factors that moderate sensitivity to connection norms, and cognitive paths for activating connection habits. To conclude, we discuss how connection cues shift the flow of communication through automatic perception.

Societal expectations

The notion that mobile technology has altered our perceptions of social connectedness is now well established (Baym, 2010; Burchell, 2015; Ito & Okabe, 2005; Kalman & Rafaeli, 2011; Katz & Aakhus, 2002). More recently, attention has turned to how such "ambient accessibility" (Ito & Okabe, 2005) or "connected presence" (Licoppe, 2004) is maintained through social expectations in the background. Beyond making personal communication easier, mobile phone ownership and monitoring has become assumed and expected, and this comes with both positive and negative ramifications (Cheever, Rosen, Carrier, & Chavez, 2014; Hall & Baym, 2012). The possibility for anytime-anywhere accessibility is now embedded in the very structure of society and our social collectives. The *Katz principle*, as it has come to be known, states that being inaccessible is not only a problem for the persons who lack mobile devices; it is a problem for their personal relationships as well (Ling, 2012).

The potential for latent expectations associated with mobile communication arises out of the idea of the generalized other (Mead, 1962), and has been further developed with the idea of reciprocal expectations. The central idea of the generalized other is that people are enmeshed in a net of mutual recognitions and expectations of one another. The net delineates the range of positively sanctioned actions and thoughts. A person must construct a notion of what is expect as a member of society. According to Mead, the way this process occurs can be seen in the way that we play organized games. For example, in order to play football successfully, we "must have the attitude of all the others involved in that game" (p. 154). This attitude is dynamic and changes as the game progresses.

By adopting this attitude of "what would others do in this situation," we are guided in how to understand and position ourselves at each point in an interaction. It is only when we all do this that we can successfully have a game—or, for our purposes, an event of social interaction. This capacity to partake in the event becomes embedded in our expectations for one another within a social institution (P. Berger & Luckmann, 1966; Bourdieu, 1977). In this case, an institution is not necessarily anything as grand as a university or a church; it can be as modest as domestic partners making breakfast. One partner sees the other make the coffee, and responds by taking out the cups. One partner retrieves the paper while the second makes the toast. The roles may change between the two, but the miniature institution of making breakfast is encapsulated by the reciprocal expectations for one another. As we expand the number of people and the types of interactions, there are the same unspoken and unconscious dynamics at play. We are continually basing our own behavior on what "others" would do in this situation.

Mobile communication, for its part, offers an original version of social expectations. Both Mead's notion of social interaction and Berger and Luckmann's notion of a social institution were based on copresence. By contrast, mobile media extends the reach of in-the-moment accountability to others. Whereas most societal constraints are contextual, those produced by mobile media are not bounded. Indeed, a number

of mobile communication scholars have discussed the way in which mobile devices change our social representation of space (de Souza e Silva & Frith, 2012; Fortunati, 2002; Humphreys, 2010; Humphreys & Liao, 2011). Fortunati (2002), for example, describes how the mobile phone "expands" (p. 520) space through increasing the potential number of spaces an individual can belong to at once.

Altogether, the nonstop potential for connecting expands the surface area for social expectations (Ling & McEwen, 2010). As members of contemporary society, we are expected to maintain a minimal level of reachability. We bear with us an active device that keeps us in potential contact with the "generalized other." Normative expectations guide our behavior in all social situations—yet the constant *possibility* of stimuli through mobile media creates a new layer of norms in the background (Burchell, 2015). As social connectedness transforms from a possibility to a presumption, the connection norm becomes an added mental "context" that can shape behavior without conscious thinking.

Automatic cognition

Mobile technology has also rewired, or allowed individuals to rewire, the underlying cognition of everyday life (Bayer, Dal Cin, et al., 2015; Rosen, Cheever, & Carrier, 2012; Turkle, 2012). Research over the last decade suggests that much of our interaction with media occurs through habitual processes (LaRose, 2010). More recent research confirms habitual processes also explain certain uses and contexts of mobile media (e.g., Bayer & Campbell, 2012; Oulasvirta, Rattenbury, Ma, & Raita, 2012; Peters, 2009). Of course, going back to William James and others, habits have been a topic of reoccurring interest in psychology (Gardner, 2014; James, 1890).

Around the same time as the first mobile phones appeared, research in social psychology popularized the concept of automaticity, which refers to more or less unconscious thinking (Bargh, Chen, & Burrows, 1996). More precisely, it can be understood as any cognitive or behavioral process that lacks attention, awareness, control, and intention (Bargh, 1994). Automaticity represents a fundamental dimension of human cognition, underlying not only simple actions but also more complex goals and motivations (Bargh & Ferguson, 2000; Bargh & Morsella, 2010). Moreover, its role in explaining behavior is increasingly germane to media and communication theory (e.g., LaRose, 2010; Peña, 2011; Bayer, Dal Cin, Campbell, & Panek, 2015).

Automaticity is typically associated with the activation of some mental network (e.g., concepts, goals, scripts, plans, and beliefs) through some form of priming (Dijksterhuis & Aarts, 2010; Wood, Labrecque, Lin, & Runger, 2014). The activated networks can thereby influence our behavioral responses without showing up on our conscious radar. By contrast, "habit automaticity" represents a category of automaticity in which a learned behavior is enacted after the appearance of a contextual cue or "trigger," a process that will be discussed below (Orbell & Verplanken, 2010; Wood et al., 2014). In all cases of automaticity, unconscious processes guide the behavior. In the case of habit, although, the response to the automatic activation is relatively

fixed. Given their established role in media behaviors (LaRose, Kim, & Peng, 2011), and theory on social internalization (Berger & Luckmann, 1966), habitual processes provide an avenue for understanding connectedness at the cognitive level.

Habits are formed initially through repetition. Although this has resulted in confounding treatment of frequent behaviors and habitual behaviors, psychological studies have found that behavioral frequency represents only one component of habitual tendencies (c.f., Ajzen, 2002; Gardner, 2012; LaRose, 2010; Verplanken, 2006, 2010). Research suggests there is variation in how people develop habitual processes—even if two people perform the same behavior the same number of times (Lally, Van Jaarsveld, Potts, & Wardle, 2010). Thus, frequency and habit automaticity are related but substantively different constructs.[2]

This distinction is especially relevant when it comes to the role of cues, or learned activation triggers, given that habit automaticity has been characterized as "cue-based" automaticity (Orbell & Verplanken, 2010). Such habits can reflect the conscious goals or intentions of a person, but they can also occur independently of goals once activated by one of their cues (Neal, Wood, Wu, & Kurlander, 2011). Another point to stress is that most behavior is not entirely conscious or unconscious, and more accurately reflects a combination of neural processes on a spectrum (Moors & De Houwer, 2006). The use of "conscious" or "unconscious" labels is commensurate with the extremes of attention. Accordingly, we do not suggest that social interaction or mobile communication is wholly unconscious or automatic. Rather, our intention is to identify and explain those moments of minimal attention that alter the flow of communication in meaningful ways.

More precisely, we concentrate our argument on *mobile mediated* communication: the perceived or performed social connection practices that occur through mobile media. Our focus on mobile communication stands in contrast to many habits that are seen as predominantly personal, such as nail biting or playing with one's hair. The mobile device, considered as a "stand alone" artifact, can be viewed in this light too. It is a collection of tools, games, photos, music, videos, and so on. For this reason, the most surprising thing about mobile media habits may be how they continue to be dominated by social features (Lenhart, Ling, Campbell, & Purcell, 2010). This does not mean mobile communication habits are singular in their neurocognitive mechanisms. To be sure, all habits are born out of the same basic set of cognitive processes, although research suggests that social habits are more habit-forming (LaRose, 2015).

At the same time, media habits manifest in discrete and sometimes novel contexts that determine their outcomes (see Yzer & Southwell, 2008). The underlying processes that generate habitual behavior may be shared, but behaviors are shaped by their associated contexts. Consequently, mobile habits interact with contextual factors in ways that are not only distinctive, but also significant for understanding their ramifications (Bayer & Campbell, 2012; LaRose, 2010). Mobile media, in particular, enable a degree of fluidity that even portable media (e.g., tablets and laptops) do not (Campbell, 2013). Whereas portable media are tethered to infrastructure such as tables, desks, and networks, mobile media can be incorporated into the embodied flows and rhythms of

daily life (Burchell, 2015)—regardless of the specific context. Compared to more traditional media, mobile media " … themselves perhaps supply a 'stable context' for evoking habitual behaviors" (LaRose, 2015, p. 371). As covered below this relationship between mobile media and contextual factors is especially relevant to the cue-based dynamics of connection habits.

Defining automatic cues

Cues represent the triggers that precede habitual action. Consider the ordinary habit of locking one's door upon leaving home. We may leave our residences just once a day. The habit of pulling out our keys serves only a single purpose: to lock a door. Yet, the action may be triggered by a number of cues—hearing the door shut, turning the lights off, setting the alarm, letting the cat out, and so forth. This example demonstrates the potential variability among people even for something as simple as walking out a door. Now suppose that we add an office key to the keychain. The number of potential cues with the keychain has doubled, and each of these keys will have their own set of nonconscious cues.

As the object of interest becomes more complex (e.g., a smartphone), the "habit" associated with that object becomes more complex in the sense that more potential cues exist (see Larose, 2015). Because habitual processes are defined by their cues, we argue that cues are essential to understanding social connectedness. Each device user has a personal repertoire of cues that guides his or her mobile behavior. Our focus on cues is particularly important because individuals are not very accurate at identifying the causes of their habits (Neal, Wood, Labrecque, & Lally, 2012). Most habits have only one behavioral outcome in response to the cues (e.g., chew a piece of gum, smoke a cigarette, or drink a coffee). Smartphones, however, produce "smarthabits."[3] In the same way that mobile phones afford more potential uses, mobile habits result in more cues and responses to go along with them.

Most media habits are highly constrained to certain environmental contexts by their design—but mobile media habits are not. The importance of the external context for cued behavior is well established (e.g., Neal et al., 2011), so much so that earlier habit definitions included context-dependence (see LaRose, 2010). Moreover, recent studies demonstrate that the influence of context tends to supersede intentions in highly habitual behavior (Neal et al., 2012). For example, Neal et al. (2011) found that habitual popcorn eaters nibble away even when they are not hungry, but only if they do so at the movies with their dominant hand (i.e., the same context as in the past). The environmental "context-independence" of mobile media, then, greatly increases the potential for habitual cues.[4] A given context need not be identical every time to become a cue, and triggers can change over time.

LaRose (2010) describes how, " … virtually any object, event, person, mood state, or memory may follow a chain of mental association that activates an habitual media consumption behavior (p. 215)." Here, we identify and separate three types of mobile

media triggers, or "connection cues," based on their contextual source. Technical cues refer to the explicit notifications and signals that come directly from a mobile device (e.g., rings, vibrations, and reminders). Spatial cues refer to triggers that occur in the surrounding environment of the individual (e.g., places, situations, and people). Mental cues refer to triggers that arise from the individual's internal cognition (e.g., emotions, motivations, and thoughts). The three categories are not the only way to organize mobile media habits, but this tripartite division helps to map the primary sources of stimuli that can influence connection habits.

Technical cues are the most commanding form of mobile media cues. They are unusual habitual triggers in the way that the technology actively "reaches out" to its owner (Licoppe, 2010), as illustrated by the red notifications and "like" counts on Facebook (Grosser, 2014), or the commonplace occurrence of imaginary "phantom" vibrations (Drouin, Kaiser, & Miller, 2012). Once a sensory cue has brought a user to the home screen, it can act as a "gateway" habit to other habits on the phone (Oulasvirta et al., 2012). Because mobile devices support a range of modalities, a range of cues will manifest whenever the screen is on, and individuals are strongly motivated to engage in "cleaning" to rid them (Burchell, 2015). For instance, mobile communication is often layered with a number of simultaneous conversations that can act as cues for each other. Alternatively, checking the time on our phone can remind individuals to peek at Facebook, and this can lead to texting or tweeting. Given this potential, technical cues allow individuals to engage in a kind of communicative pinball.

Spatial cues are subject to the current environment of the user, occurring even when there is no sound, vibration, or blink from the technology. A person may be cued from an assortment of contextual indicators in the surrounding environment, including objects, locations, situations, and other people. Spatial cues also allow for mobile media habits to be contagious; that is, goals are transmitted automatically after viewing another person perform a behavior in the research lab or in public places (C. Berger & Palomares, 2011; Hassin, Aarts, & Ferguson, 2005; Naju Ahn, Oettingen, & Gollwitzer, 2015). For instance, the sight of a crowd staring at their phones in public has become a common fixture in contemporary life (Burchell, 2015). The behavior of one teen can trigger a wave of smartphone habits around the table through a form of unconscious "choreography" (Katz, 2006). Even a person walking down the street while typing away can influence other pedestrians and onlookers to check their devices (Finkel & Kruger, 2012). Altogether, the proximal environment of the individual represents an essential context for perceiving mobile connection cues.

Mental cues can be activated from cognition alone. In this way, they are comparable to mental habits (Verplanken, Friborg, Wang, Trafimow, & Woolf, 2007), with the added dimension of a trained behavioral response. This grouping encompasses memories of past, impending, or future events, emotions or moods, personal goals or motivations—as well as expectations or normative frames (Jacobson et al., 2011). Certain emotional states, for instance, have been shown to bring about social sharing and media behaviors (e.g., Berger, 2011). Likewise, psychological research shows that thoughts and behaviors of other people elicit interpersonal goals automatically

(Fitzsimons & Bargh, 2003). Within mobile communication, this practice is seen in the phenomenon of "thinking of you" texts that we send to another person who just came to mind (Rettie, 2009b). Furthermore, LaRose (2010) points out that, "media structure and social structure provide the contextual cues that trigger media habits" (p. 206). As we argue below, one social structural frame—connection norms—may take on a larger role in everyday communication as both a direct cue and an overarching schema.

Internalized connectedness

Given the implications of mobile media for both societal expectations and automatic cognition, we turn now to understanding how the two areas are linked. As members of contemporary society, social expectations to be accessible become "internalized" into individual minds (Ling & McEwen, 2010). Therefore, most people now assume that they must maintain personal *access* to others on a regular basis. Of course, in the eras before there were mobile devices, a certain level of accessibility, availability, and accountability was also expected (Kalman & Rafaeli, 2011). With or without mobile media, most people must be minimally reachable so as not to be presumed disaffected or dead. The process of how availability expectations become internalized, then, is a question of timing (Burchell, 2015; Keightley, 2013). Perceptions of whether one is connected depend on the amount of time since one last "checked-in" with society.

Consequently, we concentrate on *checking* as a manifestation of the societal rule for connectedness. As new bits of communication are always a possibility, checking a centralized mobile device satisfies the expectation to be accessible to others (Burchell, 2015). Sometimes these checks are successful in turning up new relevant content, or simply revealing the lack of new messages. Other times, checking habits occur with no chances for new updates at all, and some research suggests that frequent checking can increase stress (Kushlev & Dunn, 2015). For example, an individual might check e-mail on a smartphone after just doing so on a laptop, repeatedly check a phone that is out of battery, or check a phone in response to so-called "phantom vibrations" described above. Whether or not these checks are successful at producing useful information, the act of checking demonstrates the role of internalized connectedness in contemporary society.

Explicating the process of internalization is a challenging theoretical task that spans disciplinary boundaries. As shown in Figure 1, this question concerns the mobile middle space between theorized societal expectations for accessibility (connection norms) and automatic device behavior (connection habits). Our approach is comparable to the social structure and personality (SSP) framework (House, 1981; McLeod & Lively, 2003) as well as work on cognitive sociology (e.g., Cerulo, 2010; DiMaggio, 1997; Howard, 1994; Lizardo & Strand, 2010), which are oriented toward mixed sociological and psychological theory. The SSP framework, for instance, has three guiding principles: identify the specific social structural *components* of interest,

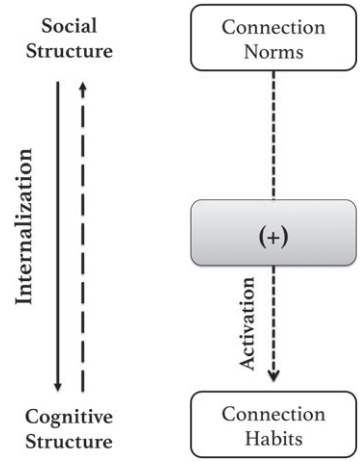

Figure 1 Internalized connectedness.

provide a *proximal* case of social structure affecting personal life, and explain the specific psychological mechanisms that are "processed and incorporated by individuals" (Mcleod & Lively, p. 80). In the current case, the implicit social practices associated with connectedness can be described as expectations, norms, or rules of an overlaying social structure, and habitual mechanisms represent a type of automatic cognitive structure.[5] Therefore, our focus on (a) societal norms, (b) checking behaviors, and (c) habitual mechanisms corresponds to these three principles, respectively.

How did connectedness become internalized? Berger and Luckmann (1966) describe a three-stage process of institutionalization through which social knowledge is passed down to new members of humanity: externalization, objectivation, and internalization. Internalization is the final moment in which, "the objectivated social world is retrojected into consciousness in the course of socialization" (p. 61). Institutionalization makes the social world and social interaction predictable. This process occurs through repeated social activities, or habits. Indeed, Berger and Luckmann describe a social institution as the "reciprocal typification of habitualized action." People come to assume that certain behaviors are expected of one another as a consequence of repeating those behaviors with other people, or simply observing those behaviors (Lizardo, 2009). Once a social reality has been internalized, as in the case of accessibility or connection expectations, then the social reality is reinforced as people act (habitually) in accordance with the perceived rules (Fig. 1, left).

Beyond habits, Bourdieu's habitus—as an early brand of cognitive sociology—provides another framework for understanding the internalization of social structure. Lizardo (2004) describes how the stated intersection of the two "structures"—social and cognitive—in habitus, " … is in fact the meeting point of two ontologically distinct but mutually constitutive structural orders" (p. 381). How is *habitus* distinct from *habit* as defined in psychology? Crossley (2013) summarizes Bourdieu's view of habit as " … mechanical behavior, a stimulus–response reflex, whereas 'habitus' implies a

flexible disposition which, though pre-reflective, remains commensurate with purposive action and in no way precludes intelligence, understanding, strategy or knowledge on the part of the actor" (p. 139). In other words, habitus encompasses more complex perceptual processes that operate without conscious reflection. Habitus is more about practices; habit is more about reflexes. Habitus is a set of "schemes" on past experience (performed or observed) that guides how an individual perceives and engages with the external world (Lizardo, 2009). Nonetheless, the true distinction may be more presentational than representative of a systematic divide in human behavior (c.f., Crossley, 2013).

The perspectives of Berger and Luckmann's habitualized action and Bourdieu's habitus suggest how internalization evolves and functions, but do not explain how certain norms are *activated* during daily life (Fig. 1, right). More recent perspectives on cognitive sociology help to identify specific cognitive processes that can activate habits in combination with cognitive cues described above. In particular, schemas are forms of automatic cognition that refer to "both representations of knowledge and information-processing mechanisms" (Dimaggio, 1997, p. 269). Schemas are "cognitive shortcuts" in a manner similar to the mental efficiency of habits and cues. Beyond their efficiency, however, activated schemata influence how people process, or perceive, new stimuli. In this way, social expectations filter the selective attention of individuals toward certain kinds of information, or "social norms of attention" (Friedman, 2011; Zerubavel, 1997). Thus, internalized connection norms have the potential to activate social habits indirectly by shifting how people *perceive* their local environments.

Empirical research has evaluated the impact of connection norms and habits on relationships and personal well-being (Cheever et al., 2014; LaRose, Connolly, Lee, Li, & Hales, 2014). For example, Hall and Baym (2012) found that increased expectations of "mobile maintenance" predicted relationship satisfaction. For dependent relationships, the study found a positive influence of accessibility. For overdependent relationships, however, greater accessibility was associated with worse relational outcomes. More recently, LaRose et al. (2014) demonstrated the potential for linking accessibility to automaticity in a study on "connection habits." The authors report a similar pattern to the Hall and Baym (2012) study in the context of emotional outcomes. More connection demands, coupled with connection habit strength, predicted reduced negative affect over the last week. Conversely, if connection habits were perceived to be uncontrollable, then they were associated with increased negative affect. Together, the current landscape suggests that greater connectivity has a positive impact up until " … the demands of social media overwhelm the individual's ability to cope with them" (LaRose et al., 2014, p. 61).

At the same time, extant theory does not clarify the cognitive mechanisms that allow for an internalized connectedness to change ongoing behavior. In the next section, we draw on psychological theory related to societal norms to understand how connectedness is activated through the interaction of *schemas* and *cues*. In doing so, we parallel work in cognitive sociology that utilizes research on automatic

cognition to provide more concrete links between social structure and behavior (DiMaggio, 1997; Srivastava & Banaji, 2011). Extending research on "connection habits" (LaRose et al., 2014), our goal is " … not to sound an alarm about a dangerous pathology afflicting society but rather to begin the examination of the effects of an emerging pattern of media use" (p. 60). Despite the increased interest on availability, accessibility, and "connection overload", the underlying media cognition is not yet understood. The mobile device is always there. The potential for contact is always there. What causes — or cues — someone to check a mobile device?

Sociocognitive model of connectedness

As presented in Figure 1, we assume that greater expectations to stay connected, or connection norms, should increase automatic checking, or connection habits, because of behavioral repetition (LaRose et al., 2014). Putting aside the long-term consequences of more or less connectivity, our task is to explain the cognitive mechanics of social connectedness. Importantly, we use the term *connection cues* to represent all cognitive cues, including technical, spatial, and mental categories, that cause checking through the direct or indirect influence of connection norms.

Connection norms challenge the cue-contingent definition of habits. If connection norms are always in effect, then it is unclear what triggers connection habits — i.e., the activation of connection cues. Thus, there is a need to reconcile general norms for accessibility with specific mechanisms that enact behavior. Following Hall, Baym, and Miltner (2014), we treat "societal," "injunctive," or "collective" norms as the psychological version of societal expectations described in the sociological perspectives above. Compared to the norms of specific contexts, expectations of connectedness are an example of a collective norm (Paluck & Shepherd, 2012). Collective norms are rarely considered in cognitive psychology, and much remains unknown about how these perceptions are learned and made salient. Connectedness, in particular, represents a challenging norm to study given its constant potential to influence behavior.

In order to explain how normative schemas enact changes in behavior, we draw on Kallgren, Reno, and Cialdini's (2000) focus theory of norms. This framework argues that a given norm will only influence behavior when it is "focal" — that is, cognitively salient. Through the principles of priming and spreading activations, " … one concept can be made salient for an individual by focusing that individual's attention on a closely related concept." For instance, subtle dimensions of a local context (e.g., number of people nearby) can influence the salience, and therefore strength, of a given norm (Cullum, O'Grady, Armeli, & Tennen, 2012). Once salient, Jacobson et al. (2011) argue that, " … descriptive or injunctive frames for a behavior can lead to response tendencies that reflect the cognitive, affective, and self-regulatory responses most commonly associated with these forms of normative information in social life" (p. 437). This is to say that normative schemas (DiMaggio, 1997; cf. "technological frames," Orlikowski & Gash, 1994) can directly trigger habitual behaviors.

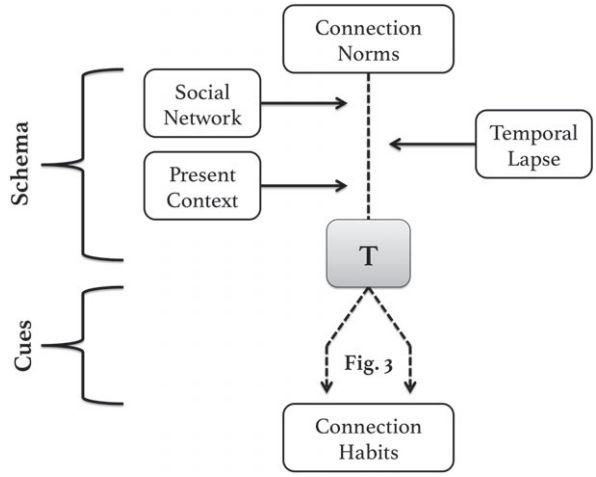

Figure 2 Sociocognitive model of connectedness. As the norm schema increases in cognitive salience (T), habitual cues are more likely to triggered.

Moving to Figure 2, we advance a sociocognitive model using cognitive schemas (top) and cues (bottom) to explain the link between societal expectations and individual habits. Specifically, we propose the activation process of connection cues depends on the salience of a normative schema (via connection norms), and its salience depends on three factors: temporal lapse, social networks, and present context. As the schema increases in salience, people are more likely to activate—and attend to—connection cues.

Schema salience of connection norms

Social connectedness is inherently tied to the perception of time. Because the specific people contacting an individual at a given moment are unknown until one sees the phone screen, we assume each person has a connection level for the "generalized other." This norm, or schema, represents a baseline temporal expectation for checking the "mystery inbox" in order to be available to society at large. Of course, the perceived norms for staying connected will vary from person to person, but even introverts are accountable to others after an extended period.

The focus theory of norms suggests that when connection norms become more salient, they will be more likely to activate connection habits. The primary question, then, is what determines how connection norms become salient enough to trigger mobile media habits at a certain moment. As developed below, we suggest that norm schema salience (T) depends on three primary factors: subjective temporal lapse, social network expectations, and current contextual factors (Fig. 2, top).

First, the value of social information appears to be linked to temporal lapse or delay in a fundamental way. To be connected is to be within a minimal temporal distance away from others. Experimental research has demonstrated that time delays in communication represent expectancy violations (Sheldon, Thomas-Hunt, &

Proell, 2006). Atchley and Warden (2012) found that the perceived value of social information via calls or texts decays in minutes—as compared to weeks for money. Indeed, connectedness has become a centralized clock for daily activity under what Burchell (2015) calls "networked time." The salience of connection norms, therefore, is dependent on the perception of time lapse. Cheever et al. (2014) find that when individuals' mobile devices are taken away, moderate and heavy users become anxious in just a few minutes. Once a norm schema is primed, the overall salience of the norm will be modulated by a subjective time perception since last check. For each perceived moment that an individual delays checking, the norm violation becomes more severe and more salient.

Beyond staying connected to the generalized other, "specific others" can also influence the salience of connection norms. For a given person, there are probable communication suspects in the social network at all times (e.g., intimate partners, trusted confidants, and professional associates). The mobile device becomes an active link to individual clusters of miniature institutions open in the background (Campbell, 2015; Hall & Baym, 2012; Kalman & Rafaeli, 2011; Katz & Aakhus, 2002). Such specific others come with discrete expectations for contact related to daily living, contributing to the overall set of implicit social expectations. Our close ties are especially likely to alter connection expectations, as they might need our help or want to coordinate plans. More so than societal expectations, Hall et al. (2014) find that it is personal relationship expectations that influence relationship quality. Mobile interaction thus tightens the social links between our trusted others, giving them special influence in our overall social network expectations. Future work is needed to clarify how complete personal networks, including weaker ties, influence the aggregate connection salience.

Third, schema salience depends on the current situation and broader context of the individual at a given moment of possible checking. Someone who is focused on working on a project or playing a game, particularly in immersive states (Bayer, Dal Cin, et al., 2015), has fewer cognitive resources to process external schemas such as norms. Conversely, immersion in certain negative situations can actually increase perceived time passage, such as when an individual was recently excluded from a social activity (Twenge, Catanese, & Baumeister, 2003). By comparison, individuals without a busy mind—e.g., the common case of boredom—are more likely to consider their social expectations (c.f., van Tilburg & Igou, 2011). The increased attentional capacity of an empty mind allows for contextual schemas, such as temporally defined connection norms, to become more salient. In addition to situational conditions and attentional resources, broader contextual factors such as time of day (e.g., workday mornings) and events of the day (e.g., extreme weather) have the potential to increase or decrease the baseline expectations for communication. As such, more research is needed to identify the complete range of contextual boundary conditions for connection norm salience.

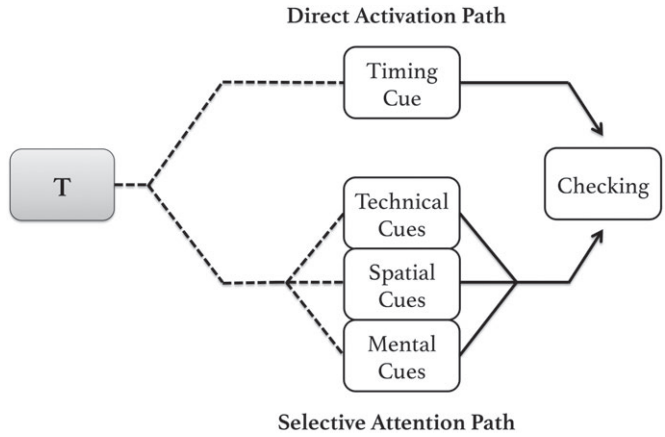

Figure 3 Activation paths for connection habits.

Cue activation of connection habits

Based on the factors above, schema salience varies from moment to moment, fluctuating as a function of timing, relationships, and context. The second half of the sociocognitive model (Fig. 2, bottom) concerns how connection cues are activated in response to increased schema salience. In Figure 3, we present two paths that increase the likelihood of cue activation as a consequence of elevated schema salience (T). For the sake of parsimony, we exclude additional cognitive factors that affect habit acquisition and activation, such as outcome expectations and self-regulatory processes (see LaRose, 2010, for a review). We propose that the salience of a norm schema has the potential to influence the activation of a direct cue and indirect attention to all other connection cues.

In the first path (Fig. 3, top), increased salience of the connection schema *directly* activates a discrete cue for staying connected. Thus, the direct path represents a mental habit (Verplanken et al., 2007) based around social norms and time perception. LaRose (2015) suggests, " … hyperlinked connections may at any time activate mental triggers for interactive media habits, many of which can be immediately enacted with a click" (p. 14). This sociotemporal trigger, or *timing cue*, is based on one's personal expectations for staying connected and current connection salience (via T). In other words, if the momentary connection salience exceeds perceived expectations for staying connected, the timing cue will be activated.

In the second activation path (Fig. 3, bottom), increased schema salience *indirectly* influences cue activation through automatic perception. In this case, the connection schema amplifies selective attention to all technical, spatial, and mental cues in line with the sociology of perception (Friedman, 2011). As more time passes, the connection schema becomes increasingly "primed" and influences how individuals see their current setting. Cumiskey and Ling (2015) write that the use of mobile technology "changes our perception of the social environment" (p. 234). Here, we propose that

connection salience changes the normative frame of the surrounding context, resulting in greater attention to stimuli relevant to staying connected. Together, the two paths — direct activation and selective attention — provide the groundwork for future theory and research on the cognition of internalized connectedness.

Conclusions

Connection norms and habits influence personal well-being and social relationships (e.g., Hall & Baym, 2012; LaRose et al., 2014). However, to understand the wider meaning and ramifications of connectedness in contemporary culture, research must also explain the underlying social and media cognition. Previous theory suggested that people are prompted to "connect" by cognitive circuits beneath their awareness (habits) and societal guidelines above their awareness (norms). Sociological perspectives explain how societal norms are internalized through habitual process and how they shape perception. Psychological perspectives explain how normative schemas are made salient and how repeated habits are catalyzed through cues. Combining the two angles, we advance a sociocognitive model for how connection habits are triggered, and how connection norms shape perception around those triggers.

Our lens on cues helps to explain the temporal and spatial flows of interaction over mobile media. The advantage of less conscious processes, whether societal or individual in scope, is greater efficiency. Connection cues establish *when* and *where* communication occurs. Over the short term, cues shift the temporal stream of communication by increasing its pace in specific directions. Additionally, by guiding automatic perception toward connection relevant cues, connection norms may alter how individuals attend to time and space. Cues represent entry points for online communication — the shift of attention from physical space to mediated space. Therefore, connection cues help to clarify the links between "offline" and "online" rhythms, bypassing an artificial dichotomy (see Burchell, 2015). In parallel, cues are relevant to how individuals manage *unavailability* in order to balance situational goals with connection norms (Birnholtz, Hancock, Smith, & Reynolds, 2012).

Over the long term, the same nonconscious processes that save time on a normal basis can come to obtrude personal goals of the moment. Understanding connection cues may help in explaining puzzling outcomes of mobile media use ranging from dangerous driving (e.g., Bayer & Campbell, 2012) to frivolous checking (e.g., Drouin et al., 2012). Likewise, cues may contribute to overly routinized patterns of communication. Choices on what social channels to use, and even what social contacts to message, become more reflexive with greater reliance on automatic cues. On average, connection cues will favor responses to rehearsed ties in a manner comparable to "tele-cocooning" — the idea that mobile devices strengthen strong relationships in ways that overshadow weak relationships (Kobayashi & Boase, 2014). Given such potential for unequal attention to others, research should examine how automatic perception affects relationship maintenance.

Nevertheless, our understanding of connection norms and habits remains at the surface level. Further research on these processes should deconstruct norms and habits into their constituent parts (cf., LaRose et al., 2014; Naab & Schnauber, 2014). A person's overall mobile device habit is not just one thing; it is a combination of many smaller subhabits. As such, the categories of cues we have distinguished, including technical, spatial, and mental cues, may be useful to new research on mobile media. Similarly, perceived social norms may vary by social network patterns and characteristics. For these reasons, it is important to examine the components of connection norms and habits, including how certain channels and certain people contribute to an individual's absolute level of connectedness. Future communication research should increase concurrent measurement of the two constructs, and consider using more implicit measures.

More theoretical work is needed to understand how more and less conscious processes interact. To confirm, one can consciously recognize the societal norms of a specific situation and act in a manner that attends to those rules. Alternatively (and more likely), more and less conscious processes may interact with each other in a simultaneous manner through cognitive scripts. Thus, the automaticity of mobile communication should not be assumed to be technological determinism (cf., Rettie, 2009a). Rather, certain characteristics of technology, in conjunction with social shaping, allow for individuals to develop more automatic orientations. The accompanying ramifications, although, obey a sort of "neurological determinism" in which cognitive pathways reproduce behaviors with less use of attention (cf., Katz, 2007). Hence, it is still people who create connection habits, even if they later perform those habits with less critical awareness. Further theoretical efforts are needed to explore the relationships between automaticity, affordances, and agency.

Extensive attention has been aimed at the revised role of social connectedness in contemporary society, yet less work considers at *how* connection occurs. Burchell (2015, p. 49) contends, " … alongside everyday narratives of social inundation, temporal pressure, and information overload, the forms and rhythms of *how we are connecting* [emphasis added] may emerge as some of the most sensitive and expressive aspects of negotiating contemporary interpersonal engagement." In a similar vein, this article supports the idea that understanding how exactly people connect is a fundamental question for communication research, and increasingly relevant as more media become portable, mobile, and wearable. Connection cues determine how people "connect" through automatic perception—in particular, when and where—and these cognitive moments guide the flow of communication.

Acknowledgements

Special thanks to Andrew Schrock for repeated feedback and helping to hone the core argument of this paper at its bleakest moments. Additional thanks to W. Russell Neuman and Paddy Scannell for their lectures and perspectives on communication theory,

which helped to spur this idea. And final thanks to Uttam Paudel for his inspiration and support of this project.

Notes

1 Of course, not all individuals follow societal norms and develop media habits. Hence, our sociocognitive model is not applicable to individuals who remain "offline."
2 Although the construct of frequency, or even "frequency automaticity," is an important area of consideration, we exclude frequency from the article due to our explicit focus on "how" connection occurs as opposed to "how much."
3 We apologize in advance for advancing a dubious "smart" nomenclature.
4 Although mobile devices are present in almost any spatial context, they are still constrained by social limitations depending the specific space (religious buildings, classrooms, movie theaters, etc.) and technical limitations (cellular service, network connections, etc.).
5 In contrast to much of SPP research, our focus is not on explicit social structure (e.g., class and networks) so much as social norms. To some, expectations are perhaps more accurately described as an element of culture as opposed to pure structure (c.f., McLeod & Lively, 2003). However, the definition of "social structure" depends on the framework and discipline at hand. Notions of social structure vary from more abstract sets of global rules to specific hierarchies of smaller and smaller collectives (Turner, 2012). In the current case, social structure can be viewed as a set of internalized constraints on all members of society in line with theories of structuration and habitus (Bourdieu, 1977; Crossley, 2013; Giddens, 1984). Irrespective of terminology, this article is oriented toward how a social structure (injunctive societal norm) manifests as a cognitive structure (checking habit).

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