

Conference Report

The Need to Connect, Predicting Personality, and the Brain's Reward System: Emerging Themes from the Berlin Social Media Research Workshop

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A significant portion of the global human population regularly uses social networking websites; Facebook alone has over 1.3 billion active users (Facebook, 2014). With this many people using these sites, the way that humans relate to one another and share information is fundamentally changing (Weiser, 2001). Therefore, many scientists have started asking questions about why we use these online social networks and what type of effects these sites are having on us. This research emanates from a variety of fields, including psychology and neuroscience. At the Social Media Research: From Brain to Behavior workshop held at the Freie Universität Berlin on October 24th, 2014, around 50 researchers, social media professionals, and artists, came together to discuss current and future scientific research with social media.

What is social in social media? Nicole Krämer (Universität Duisberg-Essen) started the workshop by asking this simple question, and then deconstructed this question into various parts. First, she addressed social motives for using social media. A recent meta-analysis demonstrated that people are driven to use social media by two factors: (1) a need to connect and belong with others, and (2) a need to manage their reputation with others (Nadkarni and Hofmann, 2012). In line with the first factor, recent research from Krämer's lab asked about the need to belong, i.e. the motivation to form and maintain interpersonal bonds (Baumeister and Leary, 1995). They assessed if the weight a person puts on social connection predicts their number of friends and time spent on social media. The results demonstrated a positive relationship between the perceived importance of social contacts (a measure of their need to belong) and the amount of friends a user had, as well as their amount of Facebook usage. Next, Krämer discussed the social effects of using social media, specifically the

effects of self-disclosure. Traditional theories of interpersonal communication assume that self-disclosure will help to develop and deepen relationships (Cozby, 1973). Importantly, self-disclosure to just one person, rather than public self-disclosure, to an entire friend network, results in greater perceived intimacy and liking of the discloser (Bazarova, 2012). Krämer's future research, with a large international sample of social media users, will continue along these lines; she will ask about how factors such as the sensitivity of the disclosed information, and the closeness of discloser to the information recipient, play into these established effects of self-disclosure. Finally, Krämer returned to the need to belong theory and asked questions about deleting friends on social media. Who goes against this need to belong by deleting friends and breaking social bonds? What are their motivations for or against this action? Do people maintain bonds because of fear of negative consequences? Future research will shed light on these heretofore-unexplored questions.

Fenne große Deters (Freie Universität Berlin) explored questions specifically related to status updates on social media. First, große Deters presented research which assessed the effect of status updating on loneliness. Results showed that an experimentally induced increase in status updating activity reduces feelings of loneliness in American college students (große Deters and Mehl, 2013). Participants feeling more connected to their friends on a daily basis explains this effect. A replication study, conducted with a German sample population, is currently underway. Große Deters then delved into research on the relationship between narcissism and Facebook status updates. Previous research has shown a link between narcissism and Facebook use (Buffardi and Campbell, 2008; Mehdizadeh, 2010). However, große Deters conducted research

in both America and Germany, and concluded with both samples that there is no substantial relationship between narcissism and status updating activity (Große Deters et al., 2014). Finally, Große Deters' discussed her current work, which addresses the social enhancement (rich-get-richer) versus the social compensation (poor-get-richer) hypotheses in the context of status updating, specifically assessing how personality might predict who benefits from status updating on social media.

In line with Deters' work demonstrating the positive effect of social media use on loneliness, Sonja Utz (Leibniz-Institut für Wissensmedien - Knowledge Media Research Center) also explored the benefits of social media use, specifically addressing questions about informational content. Is the information on social media beneficial? What type of social media usage promotes receiving informational benefits? To answer these and related questions, Utz's research group is currently conducting a longitudinal study, capitalizing on a variety of social media websites (i.e., LinkedIn, Twitter, and Facebook). The ongoing study is running for 4 years and consists of 8 waves of data collection, 2 waves per year. Over 3000 social media users are participating. Preliminary evidence for the informational benefits of social media look promising, and Utz also discussed future research to better understand these benefits by examining ambient awareness. Ambient awareness is the idea that each little bit of social information a person gleans from social media, no matter how mundane, adds up to a surprisingly sophisticated portrait of one's social network members over time (Thompson, 2008).

Can digital footprints replace personality testing? This is the question that David Stillwell (University of Cambridge) posed to the workshop audience.

Classic personality tests can be time-consuming and they can be manipulated. These are problems for researchers within academia, and also outside the academic setting, in other situations where veracity is important, such as job recruitment. Stillwell and his colleagues have addressed these problems by capitalizing on the breadth of behavioral data available in a person's online digital footprint. A digital footprint is the data that users of digital services create, both actively and passively (e.g., Google searches, email communications, or posts on social media) (Madden et al., 2007). Stillwell and his colleagues took Facebook data, more specifically Facebook "likes", and utilized machine learning algorithms to predict people's personality scores from questionnaires (Kosinski et al., 2013). He also discussed preliminary evidence that these methods have as good external validity as self-report questionnaires and that the digital footprint can actually describe a person's personality better than their friends. This led to a discussion of the future of personality testing, as well as the implications for digital privacy.

Beginning the series of talks dedicated to biological aspects of social media use, Eric Vanman (University of Queensland Australia) queried the effects of taking a break from Facebook. Reports from various sources, academic and the news media, detail the act of stopping social media use. People do this for a variety of reasons, for example, if they feel that social media use isn't productive, or if they feel they are spending too much time on social media. Vanman first reported results of a recent study where participants were not allowed to share information on Facebook for 48 hours (Tobin et al., 2014). Compared to a control group, participants who couldn't share on Facebook had lower self-reported levels of belonging and meaningful existence. In another related study from the

same publication, participants' profiles were manipulated inside the laboratory setting so that they did not receive feedback on their status updates. Compared to controls, participants also reported lower levels of belonging, meaningful existence, and also self-esteem and control. Vanman also reported preliminary findings from an experiment that specifically examined cortisol levels after taking a break from Facebook. Cortisol is a glucocorticoid, produced by the adrenal gland, and part of the stress response in humans. In other words, Vanman asked if temporarily stopping Facebook affects a biological marker of stress. To do this Vanman conducted an intervention study with 138 Facebook users, and asked half of them to stop using Facebook for 5 days. After presenting unpublished preliminary results, Vanman detailed a follow-up study where participants will stop Facebook use for at least two weeks.

At the beginning of the day, Nicole Krämer presented work concerning our fundamental need to connect with others and self-disclosure. Neuroscientist, Diana Tamir (Princeton University) continued along these lines, presenting work which specifically investigated our motivation to share self-related information with others. The idea being that by self-disclosing, we're connecting with others and satisfying our evolutionary need to belong to a group (Baumeister and Leary, 1995). Tamir and colleagues conducted several studies where, while functional neuroimaging data were collected, participants were given the option to share information about themselves (Tamir and Mitchell, 2012). Results demonstrated that people would forgo money to share information about themselves, and that the decision to do this activated regions of the brain's reward circuitry. Tamir then presented preliminary work from a series of follow-up studies, further investigating this need to connect and belong with others. For example, her

research examined the simple act of sharing random information, or the act of sharing an experience with another.

In the last talk of the workshop, Dar Meshi (Freie Universität Berlin) also presented work motivated by evolutionary theory. As humans, we not only have a need to belong to a group, we also have a need to manage our reputation with others within the group (Baumeister and Leary, 1995; Milinski et al., 2002; Nowak and Sigmund, 1998). With the above-mentioned evidence that people are driven to use social media by two factors: (1) a need to connect and belong with others, and (2) a need to manage their reputation with others (Nadkarni and Hofmann, 2012), Meshi and colleagues conducted neuroscientific research which examined the brain's reward system in response to gains in reputation (e.g., discovering someone else thinks highly of you). Meshi and colleagues collected neuroimaging data while participants experienced these gains in reputation, they then used activity from the brain's reward system to predict the intensity of participants' self-reported social media use outside the neuroimaging scanner (Meshi et al., 2013). By capitalizing on participants' social media use, Meshi and colleagues were able to extend our knowledge of nucleus accumbens function as it relates to individual differences in the processing of self-relevant social information.

In conclusion, several themes emerged from the presentations and discussion at the workshop. First, understanding the social nature of social media is still at the forefront of current research. Although it appears that the need to belong and manage one's reputation are clear drivers (Nadkarni and Hofmann, 2012), and that there is an evolutionary basis for this (Baumeister and Leary, 1995; Milinski et al., 2002; Nowak and Sigmund, 1998), researchers are

using these drives as a springboard for more research. Second, the question of research with one's digital footprint was a much discussed presentation topic. Questions about how best to use this data and how to not violate privacy in the future are to be considered. Finally, over the course of the workshop, it became clear that neuroscientific research into social media use is in its infancy; only two studies thus far have examined the brain in relation to some aspect of social media use (Kanai et al., 2012; Meshi et al., 2013). There was much interest in this however, especially regarding the brain's reward system, and attendees were excited about future research. In sum, this workshop brought together scientists and other professionals from various fields to provide a platform to discuss the current and future state of research on social media use. Workshop participants shared their empirical findings and were very much focused on the future, with the hopes of tackling the methodological and conceptual issues in this nascent field of social media research.

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