Contents lists available at ScienceDirect

Personality and Individual Differences

Fostering socio-informational behaviors online: The interactive effect of openness to experience and extraversion

Rachel Saef[a],[*], Sang Eun Woo[a], Jordan Carpenter[b], Louis Tay[a]

[a] Psychological Sciences, Purdue University, 703 Third Street, West Lafayette, IN 47907, United States
[b] Positive Psychology Center, University of Pennsylvania, 3701 Market St, Philadelphia, PA 19104, United States

ARTICLE INFO

ABSTRACT

Behavioral manifestations of personality have been well-researched in offline contexts, but less so in online contexts. To illuminate the behavioral markers linked to personality in online contexts, we use Facebook profiles to test the idea that open people are more likely to engage in socio-informational behaviors on social media (e.g., joining common-interest groups, posting statuses, "liking" things, listing events on one's profile) when they are also extraverted. Based on data from a large sample of Facebook users ($N = 115,873$), we found that open, extraverted people more frequently displayed certain behaviors (e.g., "liking" thing, listing events) capable of obtaining or disseminating information, and posted statuses containing expressive and active social language. Research implications and future directions are discussed.

1. Introduction

It is widely recognized that behavioral manifestations of personality are, at least in part, a function of contextual characteristics (Fleeson, 2001; Funder, 2001; Mischel & Shoda, 1995). Given that the social dynamics within online contexts systematically differ from those in offline contexts (e.g., Shachaf, 2008), our current understanding of personality and its role in shaping human behaviors offline may not transfer to online settings. From both a scientific and practical standpoint, an empirical investigation into the transferability (or generalizability) of offline personality research findings to online contexts (and vice versa) bears significant importance. If data suggests that personality is expressed and operates differently in online contexts, such discrepancies must be documented and incorporated into how we define and understand the role of personality in general, which may involve revision, expansion, or synthesis of existing personality theories, or even development of new theory. Also, considering the increasing popularity of social media communications and recent findings that information viewed on social media sites (e.g., Facebook) can influence people's attitudes and behaviors in both online and offline contexts (e.g., Bond et al., 2012; Conroy, Feezell, & Guerrero, 2012), there is a growing need to determine the ability of established personality traits to predict patterns of online behaviors capable of widespread information and opinion sharing.

Currently, psychological research on how personality predicts patterns of online behavior is in its infancy, rendering little empirical insight into the existence of "online personality." Our understanding of the functioning and role of these psychological traits in online behavior is limited, as the majority of relevant studies come from a computer science, rather than psychological perspective; with a large portion of existing studies using self-report measures (e.g., Marshall, Lefringhausen, & Ferenczi, 2015; Ryan & Xenos, 2011), rather than measures of actual online behavior. The potential of social media sites, like Facebook, to investigate these relationships on a large-scale is relatively untapped. Facebook provides an efficient, noninvasive platform for data collection, where researchers can obtain large, ecologically valid samples while using more accurate measures of real-life behaviors that do not disturb or impact participants' natural behaviors or reactions. Yet very few studies have taken on such large-scale investigations (i.e., large, representative samples; e.g., Bachrach, Kosinski, Graepel, Kohli, & Stillwell, 2012; Bond et al., 2012). To begin addressing this need, the present study utilizes a large sample of Facebook users ($N = 152,810$) to investigate if and how certain personality traits (especially openness and extraversion) predict actual behaviors online, more specifically, the intensity of behaviors capable of information sharing and seeking. The specific behavioral criteria chosen for this study reflect the authors' theoretical interest in online behaviors that are geared towards sharing and gathering information and opinions with others (i.e., *socio-informational behaviors*), rather than simply building and/or maintaining relationships.

Based on recent findings that information posted online can influence the online and offline behaviors of others (e.g., political

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participation), especially when accompanied by social cues (e.g., friend's profile picture; Bond et al., 2012), socio-informational behaviors of individuals with larger social networks may have greater potential for social impact within the globally popular online social world. Accessed by more than 1.10 billion people per day (Facebook Stats, 2016) and used by upwards of 80% of young adults (Brenner, 2013), Facebook allows individuals to disseminate opinions and information in an immediate, interactive, and democratic manner; and in doing so, possibly influence others' opinions and attitudes about social or political phenomena (Conroy et al., 2012). Given the potential for (certain) individuals to shape the public opinions and attitudes of the ever-growing online community, it is important to understand who has the greatest tendency towards disseminating information widely and effectively; and in doing so, determine whether we can characterize these people using our current, offline conceptualizations of personality.

1.1. Theory and hypotheses

1.1.1. Openness to experience

Based on existing theories and research on personality traits (mostly within offline contexts), we identify two prime candidates for influencing individuals' socio-informational behavior on social media sites: Openness to experience and extraversion. Openness to experience (or openness, in short) is the dispositional inclination towards new or different intellectual and cultural experiences (DeYoung, 2014), and covers a wide range of behavioral and attitudinal tendencies towards novelty, variety, and personal growth (Woo et al., 2014). Openness reflects a characteristic desire to seek, generate, and learn new ideas and knowledge, as well as engage in artistic, philosophical, and scientific pursuits (DeYoung, 2014; Woo et al., 2014). Open people are described as independent thinkers who are amenable to new ideas, experiences, and perspectives (McCrae & Costa, 1997), such that they are more likely to seek out others' insights (Cabrera, Collins, & Salgado, 2006), engage in knowledge sharing (Matzler, Renzl, Müller, Herting, & Mooradian, 2008), and enjoy meaningful debates with others (e.g., political discussion; Mondak & Halperin, 2008). Thus, for people high on openness, social media presents a new, accessible venue to express their love of learning and the learning experience (Barrick & Mount, 1991; Kanfer, Ackerman, & Heggestad, 1996). In line with offline conceptualizations of openness, recent research shows that open people typically use social media for disseminating and finding information (e.g., posting statuses intended to get others to ask questions; Carpenter, Green, & LaFlam, 2011), rather than for socializing (Hughes, Rowe, Batey, & Lee, 2012). Additionally, Marshall et al. (2015) showed that openness is associated with posting statuses about intellectual topics (e.g., politics, current events, research/science), and that this relationship is mediated by the self-reported use of Facebook to seek and find information.

Hypothesis 1. Openness will positively predict socio-informational behaviors on Facebook, such that individuals with high openness will have more groups joined, statuses posted, things "liked," and events listed as interested in or already attended (i.e., events listed), compared to those with low openness.

1.1.2. Extraversion

Despite the expectation that openness will positively predict socio-informational behaviors online, such behavioral expressions may also be contingent upon one's tendency to be sociable, gregarious, assertive and talkative—in other words, *extraverted* (Costa & McCrae, 1992). Open people will more likely realize their goal of disseminating and finding intellectual and sensory information when utilizing social, as well as informational functions of Facebook. The trait of Extraversion is associated with having more friends throughout life and across social contexts (Astendorf & Wilpers, 1998), as well as having greater social status in offline contexts (Anderson, John, Keltner, & Kring, 2001).

Research is starting to show that this trend also applies to online contexts (e.g., Amichai-Hamburger & Vinitzky, 2010), such that extraversion predicts the use of Facebook's communicative features (Ryan & Xenos, 2011) and utilizing Facebook for social engagement (Marshall et al., 2015). For instance, studies show that extraverted individuals have more friends, are more socially active, and more often reach out to and interact with others on Facebook (Bachrach et al., 2012).

Extraversion may also enhance open people's socio-informational behavior for motivational reasons. Recent perspectives have defined extraversion and openness as behavioral and cognitive forms of exploration, respectively (DeYoung, 2015), that together may contribute to socio-informational behavior online. Research shows that extraverts more readily engage in behavioral pursuit of desired goals (e.g., DeYoung, 2010; Smillie, 2008) and are more motivated by the possibilities for reward that surround them. Therefore, based on the idea that extraversion signifies one's sociability (Astendorf & Wilpers, 1998) and reward sensitivity (i.e., degree to which goal motivates behavior; Smillie, 2013), while openness defines the value of information, we purport that open, extraverts will leverage their social skills in behavioral pursuit of socio-informational goals; such that people who are open *and* extraverted will be more energized to share and attain intellectual and experiential information via social behaviors, manifested as number of groups joined, statuses posted, things liked (artists, restaurants, movies, etc.), and events listed as interested in or already attended.

Hypothesis 2. Extraversion will strengthen the positive relationship between openness and socio-informational behaviors on Facebook, such that open individuals will have the highest numbers of groups joined, statuses posted, things "liked," and events listed when they are also high on extraversion.

2. Method

2.1. Participants

Over the span of 5 years, data were collected from 152,810 participants who volunteered to use the *MyPersonality* Facebook application (Kosinski, Matz, Gosling, Popov, & Stillwell, 2015), which asks users to complete a series of psychological measures (to share on their profile if desired) and provide access to their status updates and profile content from their whole Facebook history. Analyses were limited to participants who answered basic personality items, resulting in a final sample of 115,873 (58% female, $M_{age} = 26.26$, $M_{network-size} = 223$, $M_{status\ updates} = 142.38$; relationship-status: 42% single, 21% in a relationship, 14% married, 3.5% engaged, 1.9% "it's complicated", 0.6% widowed, 0.5% in open relationships, 0.3% separated, 0.3% divorced, and 15.9% either other or not listed; racial/ethnic data were not available). More information about *MyPersonality* is available at http://mypersonality. org (a bibliography of papers using *MyPersonality* is available at http:// mypersonality.org/wiki/doku.php?id=publications).

2.2. Materials

2.2.1. Openness and extraversion

Participants completed the 100-item version of the NEO-PI-R proxy from the International Personality Item Pool (IPIP-NEO; Goldberg et al., 2006), which is a publicly available, validated measure of all the Big Five factors (Johnson, 2005). Each trait scale consisted of twenty-items rated on a five-point Likert scale (1 = *Disagree* to 5 = *Agree*). Openness and extraversion were calculated by averaging ratings for that subscale. Participants could choose how many items from each subscale to complete. Due to the range in responses, we calculated reliabilities for the average number of responses, which was eight items for each subscale. Alpha reliabilities for openness and extraversion were 0.66 and