



Seeking and receiving social support on Facebook for surgery



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ABSTRACT

Social networking sites such as Facebook provide a new way to seek and receive social support, a factor widely recognized as important for one's health. However, few studies have used actual conversations from social networking sites to study social support for health related matters. We studied 3,899 Facebook users, among a sample of 33,326 monitored adults, who initiated a conversation that referred to surgery on their Facebook Wall during a six-month period. We explored predictors of social support as measured by number of response posts from "friends." Among our sample, we identified 8,343 Facebook conversation threads with the term "surgery" in the initial post with, on average, 5.7 response posts (SD 6.2). We used a variant of latent semantic analysis to explore the relationship between specific words in the posts that allowed us to develop three thematic categories of words related to family, immediacy of the surgery, and prayer. We used generalized linear mixed models to examine the association between characteristics of the Facebook user as well as the thematic categories on the likelihood of receiving response posts following the announcement of a surgery. Words from the three thematic categories were used in 32.5% (family), 39.5 (immediacy), and 50.7% (prayer) of root posts. Few user characteristics were associated with response in multivariate models [rate ratios, RR, 1.08 (95% CI 1.01, 1.15) for married/living with partner; 1.10 (95% CI 1.03, 1.19) for annual income > \$75,000]. In multivariate models adjusted for Facebook user characteristics and network size, use of family and prayer words in the root post were associated with significantly higher number of response posts, RR 1.40 (95% CI 1.37, 1.43) and 2.07 (95% CI 2.02, 2.12) respectively. We found some evidence of social support on Facebook for surgery and that the language used in the root post of a conversation thread is predictive of overall response.

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1. Introduction

"I get by with a little help from my friends" goes the well-known Beatles lyric, and indeed there is strong evidence that social support is protective of health (Cohen and Syme, 1985; Christakis and Allison, 2006; House et al., 1988a,b; Smith and Christakis, 2008; Umberson et al., 2010) while social isolation is associated with adverse health outcomes (Durkheim, 1897; Seeman, 1996). Though some evidence suggests that social relationships are directly positive for health and well-being (Cohen et al., 2000; Thoits, 1983), other research finds that social relationships can also be associated

with negative health risk behaviors (Christakis and Fowler, 2007; Fujimoto et al., 2012). The research on social support specifically, rather than social relationships more generally, finds that increased social support lowers the risk of morbidity and even mortality (Berkman et al., 2003; Holahan et al., 1997; Holt-Lunstad et al., 2010; Mookadam and Arthur, 2004; Penninx et al., 1998; Uchino, 2004). Evidence also suggests that social support may buffer the harmful effects of stress from serious or chronic health conditions (Berkman et al., 2003; Taylor, 2011; Wheaton, 1985).

Social support has both structural and process dimensions (House et al., 1988a,b), and thus has been defined and measured in multiple ways. The structural dimension of social support can include the number of social ties or the structural characteristics of an individual's social network (House et al., 1988a,b), while process measures capture the nature of the support such as emotional support or the expression of concern, as well as instrumental or in-kind assistance.

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House and colleagues (House et al., 1988a,b) also explain that social support can vary by individual attributes including sex, age, race/ethnicity, and socioeconomic status because such factors shape differential exposure to structural barriers and opportunities in society. For example women are more likely than men to provide support to family and friends (Kessler and McLeod, 1984), but men receive more social support on average, than women (Antonucci and Akiyama, 1987; Thoits, 1995). In contrast, women report a greater number of close relationships than men (Laireiter and Baumann, 1992) and have higher levels of perceived support than men (Ross and Mirowsky, 1989). Social support appears to differ along other sociodemographic dimensions as well. For example younger and married individuals, as well as those of higher socioeconomic status, report receiving overall more social support than their counterparts (Ertel et al., 2009; House et al., 1988a,b; Schnittker, 2007; Waite and Gallagher, 2000).

Studies of social support and health also find that how individuals seek social support can be as important as the overall type or amount of support received (Heller, 1979; House, 1987). Social networking sites (SNSs) such as Facebook provide a new way to seek and receive social, particularly emotional, support for health-related issues (Centola, 2013; Moorhead et al., 2013). Originally proposed by Granovetter (Granovetter, 1973), some argue that technological and other social changes affect the way people relate to one another, such that “many meet their social, emotional, and economic needs by tapping into sparsely knit networks of diverse associates rather than relying on tight connections to a relatively small number of core associates” (Rainie and Wellman, 2012). A recent survey by the Pew Internet & American Life Project found that 11% of adult SNS users (approximately 5% of U.S. adults overall) have posted about health matters (Fox, 2011). Initial studies have found that participants in chronic disease groups on Facebook provide emotional support to one another (Greene et al., 2011). Online communities have been found to be a beneficial source of peer support for specific patient groups (Moorhead et al., 2013; Coulson et al., 2007) and potentially as effective as face-to-face support groups (Winzelberg et al., 2003). However, an understanding of social support for health among a non-patient population on SNSs is lacking (Moorhead et al., 2013).

While there is a dearth of studies of online social support for health in general (i.e., non-patient) populations, studies of social support on SNSs more generally do exist. In a survey study of undergraduates at one university, Ellison, Steinfield, and Lampe (Ellison et al., 2007) found that the intensity of Facebook use (measured with a scale of self-reported items including number of Facebook “friends,” amount of time spent on Facebook, and attitudes toward Facebook as a part of daily life) is positively associated with social capital, including the perception of available social support (see also Hampton and Wellman, 2003; Williams, 2006). Other studies of social well-being on SNSs explore how user characteristics affect the extent of supportive interaction in the SNS, and then whether such interaction is associated with actual well-being. For example, Burke, Marlow and Lento (Burke et al., 2010) found that the amount of “directed communication” on SNSs is associated with more perceived emotional support (bonding social capital) and less loneliness using a Facebook survey of $n = 1,193$ respondents. Another study using a snowball sample of adults, found that more (SNS) friends is associated with more supportive interaction on the SNS, which was associated with well-being (Oh et al., 2014).

Our study aims to begin to fill the literature gap on social support for health in a non-patient SNS population by using a large sample of Facebook users’ conversations over a six-month observation period collected by the Harris Interactive Research Life-streaming Panel (HRLP). Given that the benefits of social support

are particularly important during times of acute stress such as in response to a major health event or significant illness (Mookadam and Arthur, 2004), we restrict our attention to conversations that begin with a post about a surgical event and measure the extent of response (number of response posts received) generated in the subsequent conversation as a measure of received social (emotional) support. Received support differs from perceived support both conceptually and operationally, and research suggests that the impact of each on health may also differ (see, e.g., Barrera, 1986; Lakey and Cohen, 2000). A recent meta-analysis of the relationship between received and perceived support found a correlation of $r = 0.35$ (Haber et al., 2007). A number of studies of social support on SNSs have found a positive relationship between measures of received support and perceptions of support (e.g., Burke et al., 2010; Ellison et al., 2007; Oh et al., 2014). In contrast to earlier studies of social support for health on SNSs, these users are not restricted by membership in a patient support group. Our sample is also distinctive from previous studies of social support on SNSs more generally in that it is not based in a particular sub-population such as college students.

In line with findings for offline social support, we hypothesized that individual characteristics of younger age, female sex, married status, and higher socioeconomic status, as well as having a greater number of Facebook friends, would be associated with receiving a greater amount of emotional support (receipt of response posts) for a post about surgery on Facebook.

2. Methods

2.1. Data source

This study was determined to be exempt from institutional board review by the Committee for the Protection of Human Subjects at Dartmouth College.

We used data collected by the HRLP to examine the use of Facebook for social support. Participants to the HRLP are a subsample of the Harris Poll that give Harris permission to record their private conversations on the SNSs Facebook and Twitter. The HRLP continually recruits participants and as of June 2011, there were 33,326 adults.

On Facebook, each user creates a personalized profile and has what is known as a Wall that provides a place for conversing with others in the user’s online network. For the purposes of this study, we operationally defined a conversation thread as a collection of posts on their Wall where the Facebook user initiated the conversation. We refer to the initial post of a Facebook conversation thread as the root post and follow-up posts as response posts herein (Fig. 1).

We retrospectively collected HRLP Facebook data from December 15, 2010 to June 16, 2011 and identified 8,343 conversation threads from 3,899 adult study participants’ Facebook Walls where the root post included the term “surgery” (Tables 1 and 2).

To account for variations in grammar and spelling of the term “surgery”, we used methods based on regular expression to identify all root posts containing the term surgery (Nadkarni et al., 2011). In our sample of 8,343 Facebook conversation threads, the mean number of response posts following a root post that used the term “surgery” was 5.7 (SD 6.2) and the mean number of words in root posts was 12.4 words (SD 7.5) (Table 2). Some study participants had more than one conversation thread with a root post containing the term surgery. We account for the clustering of multiple threads to an individual HRLP participant in the analytic methods, described in detail below.

Upon a study participant’s entrance to the Harris Poll, socio-demographic characteristics are collected including age, sex, race/

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