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Permalink

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Journal

Journal of Language and Social Psychology, 37(1)

ISSN

0261-927X

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Publication Date

2018

DOI

10.1177/0261927x17706983

Peer reviewed



What You Say Is What You Get: How Self-Disclosure in Support Seeking Affects Language Use in Support Provision in Online Support Forums

Wenjing Pan¹, Bo Feng¹, and V. Skye Wingate¹

Abstract

This experimental study examined how depth of self-disclosure (baseline, peripheral, core) in support-seeking posts influenced forum viewers' interaction involvement and reciprocal self-disclosure in their responses. A series of competing hypotheses derived from several theoretical frameworks were tested. Results obtained from computerized text analyses showed that self-concept self-disclosure was associated with higher levels of interaction involvement and reciprocal self-disclosure in viewers' response messages. Implications of the findings and directions for future research are discussed.

Keywords

online support forums, support seeking, support provision, self-disclosure, interaction involvement, reciprocal self-disclosure, computerized text analysis, emotion words, cognitive words, message length

A substantial amount of research has demonstrated that quality social support offered in times of stress and difficulty can have significant positive impact on individuals' physical, emotional, and social well-being (e.g., Rains, Peterson, & Wright, 2015; Thoits, 2011; for reviews, see Goldsmith & Albrecht, 2011; MacGeorge, Feng, &

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Burleson, 2011). With the rapid development of new technologies, people are turning to the cyberspace to seek social support in various domains, ranging from daily hassles such as having conflicts with relational partners to more serious issues such as battling a life-threatening illness (e.g., Griffiths, Calear, & Banfield, 2009; Yoo et al., 2014). Yahoo!Answers (answers.yahoo.com), for example, has more than 200 million users worldwide, with 15 million users visiting daily (Shah, 2011). Eight percent of Internet users have used online support groups or forums to post questions or share their own experiences about health issues during the year of 2012 (Fox & Duggan, 2013). Scholars have attributed the use of online support groups or forums to their unique features such as anonymity, asynchronicity, and ease of access to a large audience (Barak, Boniel-Nissim, & Suler, 2008; Coursaris & Liu, 2009; Tanis, 2008).

Previous research on online support groups and forums has focused largely on descriptions of user characteristics and motivations (Houston, Cooper, & Ford, 2002; Wright, Rains, & Banas, 2010), the typologies and features of support messages (Barney, Griffiths, & Banfield, 2011; Shaw, Hawkins, McTavish, Pingree, & Gustafson, 2006), or the outcomes of participation in online support groups (Fogel, Albert, Schabel, Ditkoff, & Neugut, 2002; Rains & Young, 2009). Some recent research on online social support has examined the connection between support seeking and support provision in online forums (Feng, Li, & Li, 2016; Li & Feng, 2015). For example, Li and Feng (2015) examined the influence of others' responses and support-seekers' replies on the quality of subsequent support-providers' messages. In the current study, we focus on how self-disclosure, the core feature of online support-seeking messages, may affect the quality of support-provision messages. We also try to explore the underlying mechanisms that may give rise to any observed effect.

Self-disclosure, broadly defined, refers to the voluntary sharing of information about oneself (Cozby, 1973). When communicating with others interpersonally, individuals often establish trust and mutual understanding by making themselves vulnerable with the information they choose to share with others (Mesch & Beker, 2010). The vulnerability can be expressed by disclosing information about oneself on various topics and with varying depth (Altman & Taylor, 1973, Attrill & Jalil, 2011; Tidwell & Walther, 2002). When seeking support from unknown others in virtual communities such as online support forums, people describe their problem in the hope that others will understand their situation and will provide them with the support they need.

A well-established theoretical framework for understanding and studying self-disclosure in social interactions is social penetration theory (Altman & Taylor, 1973; Derlega & Berg, 1987). This theory describes the social penetration process analogously as the process of peeling an onion: Penetration proceeds along the breadth of topics and the depth of information disclosed, revealing various aspects and layers of one's personality. Breadth refers to the number of topics on which self-disclosure takes place, whereas depth refers to the intimacy level of self-disclosure in a particular domain. According to the theory, interpersonal intimacy is primarily developed through reciprocal and in-depth self-disclosure (Altman & Taylor, 1973). The key research question that the current study aims to address is: In the context of support seeking in online support forums that are characterized with anonymous participation and lack of

personal identity cues, how would the depth of support seekers' self-disclosure influence viewers' evaluations and responses to the support-seeking message?

Past research has identified several dimensions (e.g., verbal-person-centeredness, politeness) for evaluating the quality of support messages (e.g., Bodie & Burleson, 2008; Li & Feng, 2015). Burleson (1982), for example, developed a nine-level hierarchy to assess the person-centeredness of support messages. Although coding measures like this may provide a relatively comprehensive and accurate assessment of the quality of support messages, it can be quite time- and resource-consuming for multiple coders to content analyze a large quantity of messages (Tausczik & Pennebaker, 2010). Recent development and improvement of computerized text analysis programs such as LIWC (Linguistic Inquiry and Word Count; Pennebaker, Booth, & Francis, 2007) and ConText (Connections and Texts, 2013; <http://context.lis.illinois.edu/>) provide researchers with more efficient and reliable ways to gauge the textual features of support messages. In this study, we examine linguistic markers in support messages that reflect viewers' involvement and reciprocal self-disclosure when responding to support-seeking posts.

Interaction Involvement in Support-Provision Messages

Past research shows that a key factor that can facilitate effective interaction is the communicators' involvement in the interaction (Cegala, 1984; Perse, 1990). Interaction involvement (sometimes referred to as conversational involvement) can be defined as the extent to which an individual engages with a counterpart in an interaction (Cegala, 1984). High levels of interaction involvement reflect interaction partners' enhanced attention and engagement in the interaction, as well as strong personal and psychological connections between the parties (Levy & Windahl, 1985; Perse, 1990). Individuals who are highly involved in an interaction tend to integrate their feelings, thoughts, and experiences with the ongoing interaction, while individuals who are less involved in an interaction tend to remove themselves from the ongoing interaction (Cegala, Savage, Brunner, & Conrad, 1982).

Past research has identified cognitive and affective dimensions representing the extent of interaction involvement (Cegala, 1984; Daly, Vangelisti, & Daughton, 1987). At the cognitive level, interaction involvement is associated with intense cognitive activity that requires central processing (Cegala, 1984; Petty & Cacioppo, 1986), including greater attention to messages, more intensive encoding of information, and relating to prior knowledge (Cegala et al., 1982; Perse, 1990). At the affective level, interaction involvement is associated with greater intensity of emotions (Cappella, 1983).

Reciprocal Self-Disclosure in Support-Provision Messages

In the process of interpersonal communication, individuals often respond to others' self-disclosure by disclosing information about themselves (Collins & Miller, 1994; Cozby, 1972). The "dyadic effect" of self-disclosure reflects "the process of mutual

exposure by communicating partners” (Barak & Gluck-Ofri, 2007, p. 408). In dyadic interactions, individuals adjust their self-disclosure to their partner’s self-disclosure because their partners cued them to the appropriate norm of self-disclosure (Collins & Miller, 1994; Dindia, 1997). For example, previous studies have found that individuals who receive intimate self-disclosure feel pressured and obligated to respond with equally intimate self-disclosure (Cozby, 1972; Sprecher, Treger, & Wondra, 2013).

Self-disclosure reciprocity can thus be defined as the process by which (a) one person’s self-disclosure elicits another person’s self-disclosure (e.g., Joinson, 2001a, 2001b; Jourard, 1971; Sprecher et al., 2013), or (b) one person’s self-disclosure elicits *equivalent* self-disclosure from another person (e.g., in terms of topic, breadth, depth, frequency; Ma, Hancock, & Naaman, 2016; Moon, 2000). The first form of reciprocal self-disclosure can be considered as more general, “responsive” self-disclosure while the latter form of reciprocal self-disclosure can be understood as ‘matching’ self-disclosure. In the current study, we are focusing on the more general type of reciprocal self-disclosure, that is, without taking into consideration the specific content or features of self-disclosure.

Although research findings concerning the comparative roles of online versus face-to-face communication in facilitating (or inhibiting) self-disclosure have been somewhat mixed (see, J. Kim & Dindia, 2011), there seems to be more consistent evidence showing that text-based computer-mediated communication (CMC) tends to promote self-disclosure during initial interactions (e.g., Antheunis, Valkenburg, & Peter, 2007; Joinson, 2001b; McKenna & Bargh, 2000; Tidwell & Walther, 2002). Similarly, compared with face-to-face situations, individuals communicating through text-based CMC media tend to engage in more intimate reciprocal self-disclosure and tend to perceive others’ disclosures to be more intimate (Jiang, Bazarova, & Hancock, 2013).

Self-Disclosure in Support-Seeking Post and Viewers’ Interaction Involvement

As noted earlier, self-disclosure plays a vital role in relational communication (e.g., Laurenceau, Barrett, & Pietromonaco, 1998; Wheelless, 1976). In particular, self-disclosure serves to increase mutual understanding and trust in dyadic communication (Laurenceau et al., 1998; Rubin, 1975). Social penetration theory (Altman & Taylor, 1973) identifies three layers within the depth of self-disclosure: peripheral layer (e.g., biographical data such as name, age, and gender), intermediate layer (e.g., attitudes, values, and opinions), and core layer (e.g., beliefs, needs and fears; Altman & Taylor, 1973). Other researchers have made similar distinctions between self-disclosure of varying depth by differentiating descriptive self-disclosure from evaluative self-disclosure (Morton, 1978; Reis & Shaver, 1988). Descriptive self-disclosure refers to the disclosing of personal facts and demographic information, whereas evaluative self-disclosure typically involves revealing of one’s private feelings, opinions, and judgments. Descriptive self-disclosure is usually factual and evaluative self-disclosure is typically emotional and personal (Laurenceau et al., 1998; Li, Feng, Li, & Tan, 2015).

Evaluative self-disclosure is typically considered as more intimate and personal compared to descriptive self-disclosure (Laurenceau et al., 1998; Reis & Shaver, 1988).

Information about one's self-concept representing core self-disclosure is often viewed as substantially more private than information about one's demographics representing peripheral self-disclosure (Rubin & Shenker, 1978; Tidwell & Walther, 2002). High levels of trust have been found to be positively associated with more intended self-disclosure in terms of both depth and breadth (MacDonald, Kessel, & Fuller, 1972; Steel, 1991; Wheelless & Grotz, 1977). Past theorizing and research on self-disclosure in personal relationships leads to the predication that support-seeking posts containing core self-disclosure will elicit greater interaction involvement (in the form of longer replies, using more emotion and cognitive processing words) compared with support-seeking posts containing peripheral self-disclosure. Accordingly, we proposed the following hypothesis:

Hypothesis 1a: Compared with support-seeking posts that contain peripheral self-disclosure and baseline self-disclosure, support-seeking posts containing core self-disclosure will elicit greater viewers' interaction involvement with the post.

However, a competing prediction can be derived from theorizing and research on text-based CMC, especially CMC that occurs among strangers. Anonymity, which can be defined as a state where a person is not identifiable (Marx, 1999), is a concept that has been associated with personal identity cues in text-based CMC among strangers (Qian & Scott, 2007).¹ Compared with face-to-face communication, text-based CMC is characterized by a lack of personal identity cues (Bordia, 1997; Walther & Parks, 2002). The social presence theory (Short, Williams, & Christie, 1976) and the cuelessness model (Rutter & Stephenson, 1979) both suggest that the quality of interpersonal communication would be impaired when few identity cues are available in anonymous, text-based CMC. The lack of social context cues in text-based CMC may lead to a dehumanization perception of the communicating partners (Douglas & McGarty, 2002). The reduced awareness and greater level of uncertainty caused by lack of identity cues can result in negative outcomes such as poor quality of information, deception, and even flaming (Douglas & McGarty, 2002; Herring, 2002).

When personal identity cues are present, they tend to elicit enhanced awareness and positive perceptions of the other (Tanis & Postmes, 2007). In an online community where anonymity is the norm, personal identity cues can promote individuals' participation in online discussions (Donath, 1998). A recent study by Feng et al. (2016) investigated how support-seekers' profile features might influence viewers' perceptions of the support-seeker and thereby the quality of support messages that they provide. Their study found that support-seeking posts accompanied with a user profile containing more personal identity cues (user ID containing first name and portrait picture) elicited support responses with higher levels of person-centeredness than support-seeking posts whose user profile contained fewer personal identity cues (no profile picture, nonname ID).

Peripheral self-disclosure including information such as one's name, occupation, and geographical location contains personal identity cues (whether or not those cues are *objectively* anonymous may be irrelevant). Although a support-seeker's disclosure of peripheral information containing demographic information may potentially make the person more vulnerable to intrusion or threat to his or her privacy, it may also facilitate viewers' positive impressions (e.g., perceptions of credibility and trustworthiness) of the support-seeker and encourage prosocial responses. On the other hand, while core self-disclosure containing self-concept may reveal highly private aspects of oneself, to the extent that the individual is perceived to be anonymous by others, it may hinder formation of positive impressions and responses from viewers.

The anonymous feature of most online forums can thus work as a double-edged sword, having both positive and negative effects on self-disclosure in cyberspace. On one hand, the anonymous feature of online support groups affords members an enhanced sense of security and can alleviate support-seekers' concerns over possible embarrassment or stigmatization (Tanis, 2008). This disinhibition effect (Suler, 2004) can facilitate self-disclosure by both support-seekers and support-providers, making it easier for them to open up in the virtual world (Barak et al., 2008). On the other hand, due to privacy concerns, individuals often refrain from disclosing identity information in order to maintain their anonymity online (Joinson, Reips, Buchanan, & Schofield, 2010). For example, disclosing sexual fantasies are more common than disclosing one's real name or other personal information in anonymous forums (Christopherson, 2007).

Taken together, the "cues-filtered-out" perspectives on text-based CMC (Walther & Parks, 2002) and recent research on supportive communication in online forums suggest that, compared to core self-disclosure, peripheral self-disclosure including personal identity cues embedded in the support-seeking posts may elicit responses representing greater viewer involvement with the post. Hence, we proposed the following competing hypothesis:

Hypothesis 1b: Compared with support-seeking posts that contain core self-disclosure and baseline self-disclosure, support-seeking posts containing peripheral self-disclosure will elicit greater viewer involvement with the post.

Reciprocal Self-Disclosure

In online support forums, when support-seekers disclose information about themselves, the viewers are likely to reciprocate by also disclosing information about themselves. Disclosing core information about oneself is viewed as private and intimate. Individuals will perceive their relationship partners as more trustworthy if they disclosed core information. In turn, the recipient of core-disclosure will reciprocate by disclosing more information about himself or herself. From the perspective of social penetration theory (Altman & Taylor, 1973), support-seeking posts containing core self-disclosure may elicit more reciprocal self-disclosure from viewers compared to

support-seeking posts containing peripheral self-disclosure. Accordingly, we proposed the following hypothesis:

Hypothesis 2a: Compared with support-seeking posts that contain peripheral self-disclosure and baseline self-disclosure, support-seeking posts containing core self-disclosure will elicit more self-disclosure from the viewers.

On the other hand, the opposite hypothesis regarding reciprocal self-disclosure can be derived from the cues-filtered-out perspective on text-based CMC. The lack of cue systems and social presence in text-based CMC can make users feel less warmth and less involved (Short et al., 1976). In online forums, the reduced social presence and social context cues can lead to increased uncertainty and a dehumanization perception about the communication partner (Douglas & McGarty, 2002; Taylor, 2011). When personal identity cues are present, they can enhance the social presence and positive perceptions of the other (Tanis & Postmes, 2007).

As discussed previously, individuals often refrain from disclosing identity information to protect their identity and privacy online (Joinson et al., 2010). Disclosing personal identity cues poses greater threat to individuals' privacy and exposes individuals to greater danger compared to disclosing one's feelings and opinions. In online support forums, support-seeking posts containing personal identity cues may thus promote reciprocal self-disclosure from viewers. Therefore, we proposed the following competing hypothesis against Hypothesis 2a:

Hypothesis 2b: Compared with support-seeking posts that contain core self-disclosure and baseline self-disclosure, support-seeking posts containing peripheral self-disclosure will elicit more self-disclosure from the viewers.

The Mediating Role of Perceived Trustworthiness

Trust is a key factor that facilitates social interactions and serves as the basis for the development and maintenance of personal relationships. Trust plays an even more crucial role in online communication when individuals do not share an offline relationship (Kanawattanachai & Yoo, 2002; Walther & Bunz, 2005). In this study, we conceptualize trustworthiness as "a cognitive process associated with one's confidence in another's goals or purposes, and the perceived sincerity of another's word" (Tanis & Postmes, 2005, p. 413), as opposed to trust of people in general. In online forums where anonymity is the norm, interactions with unknown others are characterized with high levels of uncertainty (Berger, 1986), which may provide a less firm basis for trust (Tanis & Postmes, 2005). Uncertainty reduction theory (Berger, 1986) posits that interpersonal relationships develop as individuals reduce uncertainty about each other. By engaging in self-disclosure, communication partners reduce uncertainty and build trust among themselves. The reduced uncertainty and increased trust will lead them to form positive impressions of each other and facilitate more engaged interactions (Derlega, Metts, Petronio, & Margulis, 1993).

It has been well documented that there tends to be a reciprocal relationship between trust and self-disclosure (Henderson & Gilding, 2004; Joinson et al., 2010). Research shows that soliciting self-disclosure through probing questions can reduce uncertainty and form interpersonal trust online (Tidwell & Walther, 2002). Given that increased trust can lead to a greater amount of self-disclosure and vice versa (e.g., Henderson & Gilding, 2004; Jarvenpaa & Leidner, 1998; Wheelless & Grotz, 1977), we expect that potential support providers who have more trust in an unknown support-seeker in a support forum would engage in more self-disclosure in their responses. Accordingly, we proposed the following hypotheses:

Hypothesis 3: Viewers' perceived trustworthiness of support-seeker will be positively associated with (a) their involvement with the support-seeking posts and (b) their reciprocal self-disclosure.

Hypothesis 4: Viewers' perceived trustworthiness of support-seeker will mediate the impact of support-seeking self-disclosure on viewers' (a) involvement with the posts and (b) reciprocal self-disclosure.

Method

Participants

A total of 813 (69% female) undergraduate students from a large West Coast university in the United States participated in this study. Participants were offered a small amount of extra credit for their participation. The majority of the participants were Asian (50.3%, $n = 409$) and Caucasian (24.7%, $n = 201$), but the sample also included participants who identified themselves as Hispanic (14.8%, $n = 120$) or African American (2.3%, $n = 19$).

Experimental Design

This study employed a 3 (self-disclosure: peripheral self-disclosure vs. core self-disclosure vs. baseline self-disclosure) \times 2 (problem type: job vs. major) factorial design.² In the context of online supportive communication, it may not be ecologically valid for a support-seeking post to contain purely demographic and/or core self-disclosure. The mere description of the support-seeker's problematic situation will constitute self-disclosure that is likely of moderate depth. Accordingly, a baseline self-disclosure condition that contains description of the problem was included in the experimental design (see Figure 1). In the peripheral self-disclosure condition, demographic information (geographic location, major, occupation) was revealed in the support-seeking posts (see Figure 2). In the core self-disclosure condition, information about the support-seeker's self-concept (values, beliefs, fears)³ was included in the support-seeking posts (see Figure 3). Within each of the two topics, the number of words used and the pieces of self-disclosure information were kept equal across conditions. Each participant was randomly assigned to one of the six conditions.

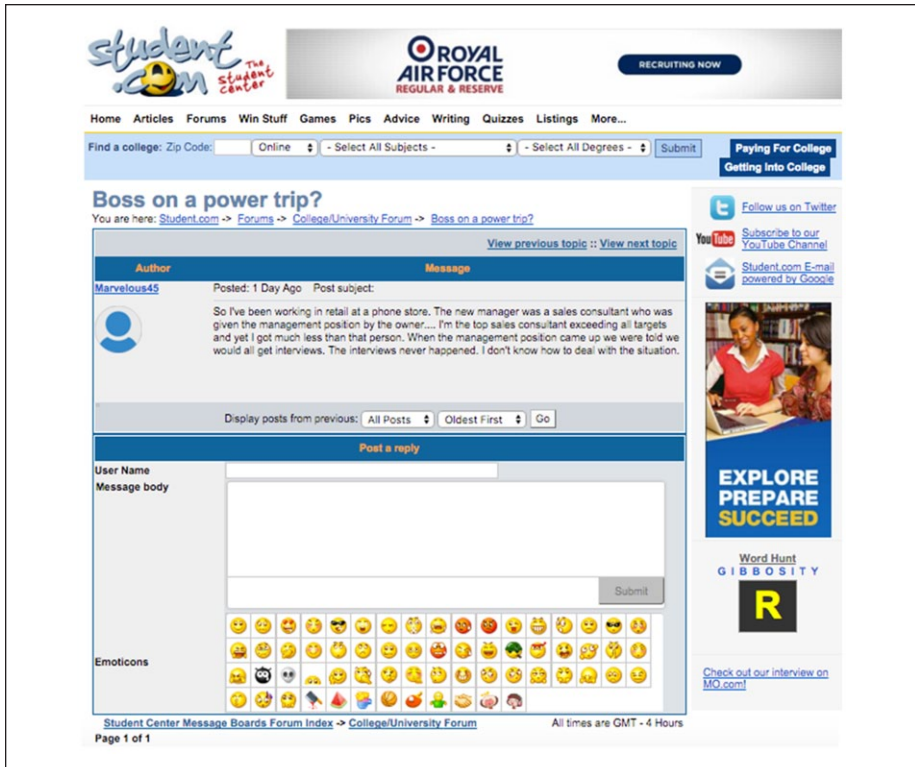


Figure 1. Example of manipulation of support-seeking posts containing baseline self-disclosure.

All six support-seeking forum posts were pretested to assess if the support-seeking posts containing core self-disclosure is perceived as more private and intimate compared to the posts containing peripheral self-disclosure. A sample of 113 students, none of whom was involved in the official experiment, participated in the pretest. Perceived privacy was measured by two items (e.g., “How private do you think the message is,” “How likely would you share information similar to what is disclosed in the message”) on an 11-point scale (e.g., 1 = *not private at all*; 10 = *extremely private*). Support-seeking posts containing core self-disclosure ($M = 5.25, SD = 3.36$) were rated as more private compared to the support-seeking posts containing peripheral self-disclosure ($M = 4.04, SD = 2.93$), $t(112) = 5.59, p < .001$.

Procedure

On arrival at the research lab, each participant was escorted by a research assistant to a cubicle with a computer. In order to simulate real online support-provision experience for the participants, a virtual forum (“Students Forum”) that resembles the appearance

The screenshot shows a forum page on Student.com. At the top, there are logos for 'student.com The Student Center' and 'ROYAL AIR FORCE REGULAR & RESERVE' with a 'RECRUITING NOW' button. A navigation bar includes links for Home, Articles, Forums, Win Stuff, Games, Pics, Advice, Writing, Quizzes, Listings, and More... Below this is a search bar for colleges and a 'Paying For College' button. The main content area features a post by user 'Marvelous45' titled 'Boss on a power trip?'. The post text reads: 'So I graduated from Michigan State with a bachelor's degree in Business Management. Since then I've been working in retail at a phone store called Cricket Wireless in Madison, Wisconsin. The new manager was a sales consultant who was given the management position by the owner... I'm the top sales consultant exceeding all targets and yet I got much less than that person. When the management position came up we were told we would all get interviews. The interviews never happened. I don't know how to deal with the situation.' Below the post is a 'Post a reply' form with fields for 'User Name' and 'Message body', a 'Submit' button, and an 'Emoticons' section with a grid of various emoji icons. On the right side, there are social media links for Twitter, YouTube, and an email subscription, along with a 'Word Hunt GIBBOSITY' logo featuring a large letter 'R' and a link to 'Check out our interview on MO.com!'. At the bottom, it says 'Page 1 of 1' and 'All times are GMT - 4 Hours'.

Figure 2. Example of manipulation of support-seeking posts containing peripheral self-disclosure.

and function of a real online forum was designed for the experiment.⁴ The computer screen already displayed a prerandomly-selected webpage of a support-seeking post on the forum. Participants were then instructed to create a username and provide a response after reading the support-seeking post. After clicking the button “post a reply,” the participant’s response would appear immediately underneath the original post. Each participant was only able to view his or her own response. After submitting their response, participants were directed to an online survey system to complete a questionnaire on their perceptions of the support-seeker and the post. On completion of the questionnaire, participants were thanked and debriefed.

Measures

Interaction Involvement. Behaviorally, interaction involvement can be enacted verbally and/or nonverbally (Burgoon, Newton, Walther, & Baesler, 1989; Coker & Burgoon, 1987). In this study, we focus on individuals’ choices of words and linguistic style as

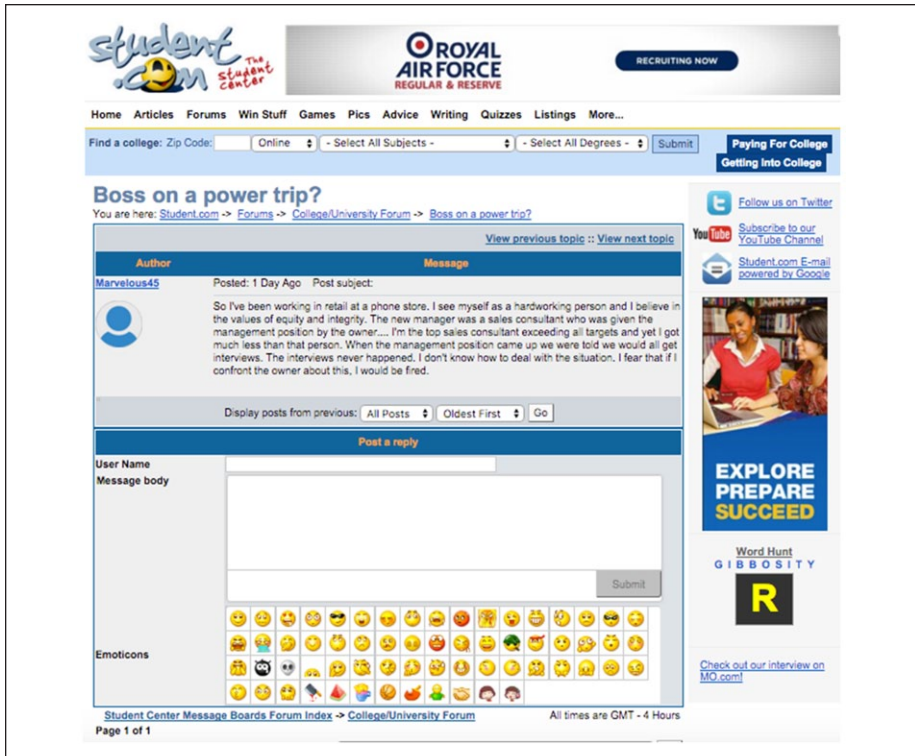


Figure 3. Example of manipulation of support-seeking posts containing core self-disclosure.

markers of interaction involvement (Perse, 1990). Studies have shown that the level of individuals' interaction involvement is reflected in the words they use (Tausczik & Pennebaker, 2010). In the computerized text analysis literature, many studies have adopted message length (word count), emotion words, and cognitive processing words as indexes of individuals' affective and cognitive involvement (for a detailed review, see Tausczik & Pennebaker, 2010).

Word count can serve as "a proxy for amount of communication" (Tausczik & Pennebaker, 2010) and it has been adopted by several studies as a measure for involvement and engagement (e.g., Leshed, Hancock, Cosley, McLeod, & Gay, 2007; Sexton & Helmreich, 2000). For example, during small group interaction, teammates who produced more words were also rated as more involved and more focused (Leshed et al., 2007). Word count has also been used as an effective measurement for the breadth or amount of self-disclosure in CMC (Joinson, 2001a; Joinson & Paine, 2007).

How people express emotions and the extent to which they express emotions indicate how they experience the world (Tausczik & Pennebaker, 2010). For example, researchers have found that emotion words can reflect individual differences in their self-presentational and relational concerns in their Facebook status updates, wall

posts, and private messages (Bazarova, Taft, Choi, & Cosley, 2013). Of particular relevance to the current study was research showing that the use of emotion words was an indicator of degree of immersion (Holmes et al., 2007; Tausczik & Pennebaker, 2010). For example, in their study examining the writing of victims of intimate partner violence, Holmes et al. (2007) found that the use of positive and negative emotion words indicated how immersed the victims were with the traumatic experience, which led to increased physical pain. Words in the “emotional or affective processing” category are words that reflect use of positive emotions, including positive feelings and optimism (e.g., *happy, joy, love*), and negative emotions, including anxiety, anger, and sadness (e.g., *hate, worthless, afraid, cry*).

Use of cognitive processing words has also been used as a measure of the depth and complexity of thinking (Tausczik & Pennebaker, 2010). For example, the use of inclusion words (e.g., *but, without*) and conjunctions (e.g., *and, also*) can reflect individuals’ cognitive complexity because they are either used to make a distinction or join multiple thought together (Tausczik & Pennebaker, 2010). The use of causal words (e.g., *because, hence*) and insight words (e.g., *know, consider*) also reflect individual’s active reappraisal process (Peña & Pan, 2016).

Cognitive processing words are the words that people use to connect their thoughts and they reflect people’s depth and complexity of thinking (Boals & Klein, 2005; Owen, Yarbrough, Vaga, & Tucker, 2003; Tausczik & Pennebaker, 2010). Words in the “cognitive processing” category are words that reflect thinking of causation (e.g., *because, effect, hence*), insight (e.g., *think, know, consider*), discrepancy (e.g., *should, would, could*), inhibition (e.g., *block, constrain*), tentativeness (e.g., *maybe, perhaps, guess*), and certainty (e.g., *always, never*).

Each participant’s response message was processed by LIWC (Pennebaker et al., 2007), which is a thesaurus-based software that matches individual words in textual messages with predefined categories (Tausczik & Pennebaker, 2010). In recent years, LIWC has been widely used to content analyze various sorts of texts (e.g., Cohn, Mehl, & Pennebaker, 2004; Slatcher, Vazire, & Pennebaker, 2008). The percentage and number of words used in each predefined category were calculated. As a result, each participant had scores in his or her emotional content word usage, cognitive processing word usage, and the length (word count) of his or her response messages.

Reciprocal Self-Disclosure. When people want to draw others’ attention to themselves, they tend to use more first-person singular pronouns such as “I,” “my,” “me,” and “mine” (Gunsch, Brownlow, Haynes, & Mabe, 2000). First-person singular pronouns have been used in several studies as parameters of self-disclosure in both offline (Derlega & Berg, 1987) and online settings (Barak & Gluck-Ofri, 2007). In this study, we also adopt first-person singular usage in support-provision messages as a marker of reciprocal self-disclosure.

In line with previous research, the first-person pronouns (“I,” “me,” “mine,” and “my”) were employed as a linguistic marker representing reciprocal self-disclosure (Barak & Gluck-Ofri, 2007). Accordingly, the percentage and number of first-person pronouns were employed as measures of degree of reciprocal self-disclosure.

Table 1. Differences Between the Three Experimental Conditions.

Variables	Demographic disclosure		Self-concept disclosure		Baseline disclosure	
	Mean	SD	Mean	SD	Mean	SD
Message length (word count)	101.84	60.87	108.59 ^a	59.55	93.49 ^b	59.07
Emotion words	4.80 ^a	2.80	5.83 ^b	2.89	5.03 ^b	2.84
Cognitive processing words	20.12	5.76	21.02	4.69	20.69	5.00
First-person pronouns	2.59 ^a	2.44	2.99 ^b	2.48	2.50 ^a	2.34
Perceived trustworthiness	6.61	0.99	6.69	0.95	6.68	1.11

Note. Within each row, numbers with different superscripts significantly differ from one another ($p < .05$).

Perceived Trustworthiness. Five items on a 9-point scale (1 = *completely disagree*, 9 = *completely agree*) were used to measure participants' perceived trustworthiness toward the support-seeker (e.g., "I felt the poster is trustworthy," "I felt the poster is honest in describing the problem," "What the poster wrote is believable"). The five items were drawn from two existing scales of credibility and perceived trust (Rempel, Holmes, & Zanna, 1985; Wheelless & Grotz, 1977) and were modified for this study. The five items showed good internal consistency ($M = 6.66$, $SD = 1.36$, $\alpha = .81$).

Results

Hypotheses 1a and 1b were concerned with the effect of self-disclosure in support-seeking posts on viewer involvement reflected in their responses. The two competing hypotheses were tested with a series of analyses of variance (ANOVAs).⁵ The analyses detected a significant main effect for depth of self-disclosure on participants' use of emotional content words after controlling for the number of emotional content words in the support-seeking messages, $F(2, 809) = 7.40$, $p < .001$, $\eta^2 = 0.03$. Planned contrast analysis showed that participants who read the support-seeking posts containing core self-disclosure used more emotional content words ($M = 5.83$, $SD = 2.89$) compared to those who read the support-seeking posts containing peripheral self-disclosure ($M = 4.80$, $SD = 2.80$), $t(524) = 4.13$, $p < .001$, Cohen's $d = .36$, or baseline self-disclosure ($M = 5.03$, $SD = 2.84$), $t(535) = 3.25$, $p < .001$, Cohen's $d = .28$. The latter two conditions did not differ in the number of emotional content words, $t(561) = .94$, $p = .35$, *ns* (see Table 1). Follow-up analyses were conducted to see if the experimental conditions differed in terms of the use of positive and negative emotion words in participants' responses. After controlling for the number of positive emotion words in the support-seeking messages, no significant effect was observed with regard to the use of positive emotion words, $F(2, 809) = 0.32$, $p = 0.23$, *ns*. However, after controlling for the number of negative emotion words in the support-seeking messages, there was a significant main effect of support-seeker self-disclosure on participants' use of negative emotion words, $F(2, 809) = 14.99$, $p < .001$, $\eta^2 = 0.04$. Participants who read the support-seeking posts containing core self-disclosure ($M = 1.67$, $SD = 1.68$) used

more negative emotion words compared to those who read the posts containing demographic disclosure ($M = 1.02$, $SD = 1.28$), $t(524) = 5.00$, $p < .001$, Cohen's $d = .44$, and compared to those who read the posts containing baseline disclosure ($M = 1.18$, $SD = 1.49$), $t(535) = 3.63$, $p < .001$, Cohen's $d = .31$.

The ANOVA analyses did not detect a significant main effect for depth of self-disclosure on participants' use of cognitive processing words after controlling for the number of cognitive processing words in the support-seeking messages, $F(2, 809) = 3.12$, $p = 0.13$, *ns*. After controlling for the length of the support-seeking messages, a significant main effect for depth of self-disclosure on participants' length of responses was observed, $F(2, 809) = 6.68$, $p < .001$, $\eta^2 = .02$. Decomposition of the main effect revealed that participants who read the support-seeking posts containing core self-disclosure ($M = 108.59$, $SD = 59.55$) wrote longer responses compared to those who read the baseline self-disclosure posts ($M = 93.49$, $SD = 59.07$), $t(535) = 2.97$, $p < .05$, Cohen's $d = .25$, and compared to those who read support-seeking posts containing peripheral self-disclosure ($M = 101.84$, $SD = 60.87$), $t(524) = 1.28$, $p < .05$, Cohen's $d = .11$. Overall, the above results indicate that Hypothesis 1a was partially supported and Hypothesis 1b was not supported.

Hypotheses 2a and 2b were concerned with whether different depth of support-seeker self-disclosure would elicit different levels of reciprocal self-disclosure in participants' responses. The ANOVA detected a significant main effect for depth of self-disclosure on participants' use of first-person pronouns after controlling for the number of first-person pronouns in the support-seeking messages, $F(2, 809) = 7.03$, $p < .001$, $\eta^2 = 0.03$. Planned contrast analysis showed that participants who read the support-seeking posts containing core self-disclosure used more first-person pronouns ($M = 2.99$, $SD = 2.48$) compared with those who read the support-seeking posts containing peripheral self-disclosure ($M = 2.59$, $SD = 2.44$), $t(524) = 3.80$, $p < .05$, Cohen's $d = .16$ or baseline self-disclosure ($M = 2.50$, $SD = 2.34$), $t(535) = 2.35$, $p < .05$, Cohen's $d = .20$. The latter two conditions did not differ in use of first-person pronouns, $t(561) = .45$, $p = .65$, *ns*. Therefore, Hypothesis 2a was supported while Hypothesis 2b was not supported.

Hypothesis 3a predicted a positive association between participants' perceived trustworthiness of support-seekers and their involvement with the support-seeking posts. Pearson-product correlation showed that participants' perceived trustworthiness of support-seekers ($M = 6.66$, $SD = 1.02$) was not associated with their use of emotional content words ($M = 5.20$, $SD = 2.87$), $r(813) = -.01$, $p = .96$, *ns*, or use of cognitive processing words ($M = 20.60$, $SD = 5.19$), $r(813) = -.06$, $p = .12$, *ns*. However, participants' perceived trustworthiness of support-seekers was positively associated with the length of their responses ($M = 100.97$, $SD = 59.07$), $r(813) = .18$, $p < .001$. Therefore, Hypothesis 3a was partially supported.

Hypothesis 3b predicted a positive association between participants' perceived trustworthiness of support-seekers and the reciprocal self-disclosure in their responses. Pearson-product correlation showed that participants' perceived trustworthiness of support-seekers was not associated with their use of first-person singular pronouns, $r(813) = .096$, $p = .07$, *ns*. Therefore, Hypothesis 3b was not supported.

Hypothesis 4a was concerned with the mediation effect of perceived trustworthiness of the support-seekers in the link between depth of self-disclosure and viewer involvement with the support-seeking posts. The “self-disclosure of support seeker–perceived trustworthiness–interaction involvement” link was tested with PROCESS (Hayes, 2013). The indirect effect of self-disclosure on participants’ use of emotional content words was not significant ($b = .00$, $SE = 0.01$, 95% confidence interval [CI] = $[-0.0168, 0.0086]$) after bootstrapping with 5,000 resamples. The indirect effect of self-disclosure on participants’ use of cognitive processing words was not further tested due to the lack of total effect. The indirect effect of self-disclosure on participants’ message length was not significant ($b = .40$, $SE = 0.47$, 95% CI = $[-0.5013, 1.4020]$). Hypothesis 4a was not supported.

Hypothesis 4b was concerned with the mediation role of perceived trustworthiness of the support-seekers in the link between depth of self-disclosure and reciprocal self-disclosure in participants’ responses. The indirect effect of self-disclosure on participants’ reciprocal self-disclosure was not significant ($b = .01$, $SE = 0.01$, 95% CI = $[-0.0045, 0.0341]$). Hypothesis 4b was not supported.⁶

Discussion

This study tested the effect of self-disclosure in support-seeking posts on the interaction involvement and reciprocal self-disclosure in support provision in online support forums. Although various aspects of online support seeking (e.g., problem type, personal experience, linguistic features and politeness of support-seeking messages) may influence viewers’ likelihood of responding as well as the content of their responses, the current study focused on how a core component of online support-seeking—self-disclosure—may influence the involvement and reciprocal self-disclosure from viewers. We identified message length, emotion words, and cognitive processing words as linguistic parameters reflecting interaction involvement and first-person singular pronouns as parameters reflecting reciprocal self-disclosure. We also explored the potential role of perceived trustworthiness of the support-seeker in explaining the effect of support-seeker’s self-disclosure on viewers’ responses.

Overall, our results revealed that participants who read support-seeking posts containing core self-disclosure, compared to peripheral self-disclosure, exhibited higher levels of emotional involvement (reflected in greater use of emotion words) and higher degrees of disclosure reciprocity in their responses. These findings are more congruent with social penetration theory (Altman & Taylor, 1973), as well as past research on self-disclosure in relational communication (Bargh & McKenna, 2004; Tichon & Shapiro, 2003). These results indicate that the norms that people follow to establish relational intimacy and build interpersonal relationships may also apply to communication with unknown others in virtual environment.

Our findings did not appear to support the competing predictions derived from the “cues-filtered out” perspective (Walther & Parks, 2002). These findings were also somewhat inconsistent with the results of recent research on supportive communication that examined the influence of personal identity cues on support provision. The

discrepancy with previous research may be understood in light of the specific experimental design employed in the current study and that in previous studies. In the current study, personal identity cues of the support-seekers were manipulated through different forms of self-disclosure in the support-seeking posts. In previous research, however, personal identity cues were manipulated through the presence and absence of profile pictures or user IDs (Feng et al., 2016; Tanis & Postmes, 2007). In those studies, it was found that perceptions of others, such as perceived social presence (Feng et al., 2016) and trustworthiness, could be enhanced by inclusion of profile pictures (Tanis & Postmes, 2005). It is possible that personal identity cues contained in textual messages have a less salient impact on viewers' perceptions of unknown others in the virtual environment than personal identity cues contained in nontextual features such as pictures.

In addition, in the current study, the demographic information (e.g., location, occupation) disclosed in the support-seeking post was relatively public. Although results of our study showed that the peripheral self-disclosure was viewed by participants as less private than the core self-disclosure,⁷ recent theorizing and empirical assessment of disclosure intimacy (Jiang et al., 2013; Mitchell et al., 2008) suggest that disclosure of various types of information can vary in intimacy level. In other words, not all factual or peripheral disclosures are "peripheral" (least intimate) and not all core self-disclosures are "core" (most intimate). For example, revealing ostensibly superficial demographic information such as one's real name and ethnicity, especially a stigmatized one, on a public forum may be considered as a highly private disclosure. Future research should conduct more nuanced investigation of the roles of peripheral disclosure and core self-disclosure in online support-seeking by taking into account the varying intimacy levels within each disclosure type.

Another explanation for the failure of peripheral self-disclosure to elicit enhanced involvement and reciprocal self-disclosure is that, under certain circumstances, the inclusion of personal identity cues in the support-seeking posts may trigger negative appraisals from viewers and thus "backfire." After all, personal identity cues are not inherently positive and there is the likelihood that viewers may form negative impressions of an unknown support-seeker based on the revealed personal identity cues. In other words, the specific content and valence of disclosure matter. In their study investigating the language style of pro-anorexic online forum conversations, Chang and Bazarova (2016) found that forum users' initial disclosure containing stigma-related emotion words was associated with negatively valenced responses. In this study, the peripheral self-disclosure revealed the support-seeker as a college graduate working at a retail store. Participants in this study, who were all college students at a large West Coast university, might have made a somewhat negative attribution of the support-seeker (e.g., an unsuccessful professional), which resulted in less "warm" responses to the post. Future research should pursue more nuanced investigation of the conditions under which peripheral self-disclosure (and personal identity cues) may or may not have an impact (as well as the direction of the impact) on perceptions and behaviors in interactions among strangers in online environments. In particular, it is worthwhile to investigate how type of self-disclosure (e.g., self-concept vs. demographic) may

combine and interact with the content and valence of disclosure (positive vs. negative) to influence viewer perceptions and responses.

We did not observe any evidence showing the mediating role of perceived trustworthiness. One possible explanation is that participants' perceptions of the trustworthiness of the support-seeker were largely influenced by other individual, relational, and situational factors (Feng et al., 2016; Sheldon, 2009). For example, trust tends to be greatly influenced by perceived similarity and liking (Anderson & Emmers-Sommer, 2006). Participants' perceived trust of the support-seeker could also be influenced by the credibility of the post content or the topics that have been discussed (Feng et al., 2016). Participants in our study might have generally perceived high levels of similarity and identification with the support-seeker, partly due to the "ingroup" nature of the forum. Group identity, perceived similarity, and liking⁸ might have all contributed to the average perceived trustworthiness of the support-seeker (average trust rating across all conditions was 6.66 on a 9-point scale). It is also possible that perceived trustworthiness of the support-seeker was not reflected in the involvement or the reciprocity of self-disclosure but in some other aspects of the support-provision messages not examined in this study, such as politeness and person-centeredness (Feng et al., 2016). Future research should investigate these possibilities.

Theoretical frameworks such as the social identity model of deindividuation effects (Tajfel & Turner, 1986) and social information processing theory (Walther, 1992) also suggest alternative mechanisms that may explain the observed advantage of core self-disclosure over peripheral self-disclosure in promoting involvement and reciprocal disclosure from viewers. Both theories suggest that anonymity and lack of individual identity cues can lead to overattribution of similarities and thus "hyperpersonal" communication (Walther & Parks, 2002). Future research should explore this alternative mechanism.

In summary, although findings from our study appear to be more consistent with predictions derived from social penetration theory than those derived from the cues-filtered-out perspective, they should not be taken as conclusive. As with the case of most experimental research in social science, these findings should be interpreted in light of the specific features of the research design as well as characteristics of the participant sample. More research is needed to better understand the complex processes of communication in online communities. Therefore, caution should be exercised when applying these findings to practices in specific settings.

Limitations and Future Research

Several limitations exist in the current study. First, for the purpose of assessing support-seeking outcomes such as reciprocal self-disclosure in viewer responses, we required each participant to provide a response after reading the support-seeking post. In real-life situations, however, many support forum users are lurkers who rarely contribute content to online forums (White & Dorman, 2001; Zhu, 2006). It will be interesting to investigate whether and how self-disclosure in support seeking may influence viewers' motivation or intention to respond to a support-seeking post from an unknown other.

Second, although computerized text analysis has proven to be a reliable and efficient method for content analyzing large quantities of verbal messages, it has its constraints. For example, computerized text analysis programs ignore context, sarcasm, and idioms (Tausczik & Pennebaker, 2010). For instance, one participant wrote in the response message, "I would suggest you weigh out what is most important to you." Here the expression "weigh out" means to measure or determine the relative value of things. Based on LIWC's internal dictionary, however, the word "weigh" belongs to the category of biological words and words related to ingestion. In this specific case, LIWC failed to detect the meaning of the idiom "weigh out."

Relatedly, due to the exclusive reliance on words recorded in the analytical software's dictionaries, the assessment of the outcomes of interest can be somewhat rigid or even biased. For example, despite the common use of the first-person pronouns as a linguistic marker of self-disclosure (Barak & Gluck-Ofri, 2007), they are neither the only nor necessary indicators of self-disclosure. A person can engage in self-disclosure without using any first-person pronouns, especially when the person shares opinion (e.g., "Studying abroad is absolutely a valuable learning experience") or when the conversational context clearly indicates that the information the person is sharing is self-disclosure (e.g., stating "All employees at the company receive at least 2K bonus each year" after saying "I work at X company").

Finally, given the lack of computerized text analysis's ability to produce more nuanced, contextualized coding, we were only able to assess general ("responsive") form of reciprocal self-disclosure rather than equivalent ("matching") form of reciprocal self-disclosure. In the context of supportive communication, reciprocating equivalent self-disclosure, especially in terms of topic (e.g., sharing similar problems or experiences), may be particularly helpful (Doherty & MacGeorge, 2013; W. Kim, Kreps, & Shin, 2015). Future research should thus try to triangulate the analyses of viewer responses by combining automated linguistic analyses with contextualized, content analyses that are conducted via manual coding.

Acknowledgments

The authors would like to thank the anonymous reviewers and the editor for their comments and guidance on the revisions of this article.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. Scholars have distinguished between visual anonymity and discursive anonymity, with the former referring to the situation where the physical presence of certain message

source cannot be traced and the latter referring to the situation where verbal communication cannot be traced to a source (Qian & Scott, 2007). Anonymity can also be categorized into objective anonymity and perceived anonymity. Using a pseudonym, for example, has high objective anonymity but its perceived anonymity may vary. Likewise, although using a real name has low objective anonymity, it may elicit varying perceptions of anonymity. Although the existing literature on the anonymity feature of text-based CMC used among strangers seems to imply both forms of anonymity, perceived anonymity should have more proximal impact on individuals' perceptions and responses than objective anonymity.

2. In the larger project, profile pictures showing different ethnicities (Caucasian vs. Asian) and sex (female vs. male) were also included in the design to assess a different and independent set of research questions. Preliminary analyses showed that manipulations of profile picture did not interact with self-disclosure. Therefore, those factors were not included in the analyses reported in this study.
3. As defined by Rubin and Shenker (1978), self-concept disclosure is not confined to disclosure of one's beliefs and values. It has been used as a type of self-disclosure, including one's feelings, thoughts, worries, and even fears.
4. Much of past experimental research on CMC has relied on the use of mock-up web pages as experimental stimuli (e.g., Walther, Van Der Heide, Kim, Westerman, & Tong, 2008). In order to approximate online interactions, this study employs an experimental design embedded in a real online support forum which enables participants to view, click, and post their responses onto the forum. This methodology has been successfully employed in several recent experimental studies on online supportive communication (Feng et al., 2016; Li & Feng, 2015). It allows us to (a) examine online supportive communication in a much more ecologically appropriate manner and (b) manipulate our central variables of interest (i.e., support-seeker's self-disclosure) while at the same time controlling for factors that are not the focus of examination in this study but can potentially influence online support provision (e.g., number of the support-seeker's old posts, profile features).
5. Preliminary ANOVA analyses were conducted to examine if problem type had any moderating effect on the link between depth of self-disclosure and the outcome measures. None of the interaction terms was significant. Detailed results are available on request. To simplify the report of our key findings, problem type was not examined further in the subsequent hypotheses tests.
6. Furthermore, in order to access if the induced effect was indeed due to the manipulation of the depth of self-disclosure in the support-seeking messages rather than the valence of the support-seeking messages, a follow-up study was conducted. The follow-up study employed a 2 (topics: problem with the boss vs. changing major) \times 3 (depth of self-disclosure: baseline vs. peripheral vs. core) between-subjects design. A new sample of 176 college students participated in the follow-up study. The valence of the messages was measured with the following items on a 7-point scale: (a) the information disclosed in the post is extremely negative/extremely positive, (b) the post presents a positive image about the support-seeker: strongly disagree/strongly agree, and (c) the post offers positive information about the support-seeker: strongly disagree/strongly agree. The results showed that depth of self-disclosure (baseline, peripheral, core) in support-seeking posts did not affect participants' evaluations of the valence of the posts, $F(1, 173) = 2.066, ns$.
7. In the experiment, we also measured the perceived anonymity of the support-seekers with 10 items (e.g., "The poster's identify is unidentified," "I could identify cues that could be used to locate the poster's true identity") on a 9-point scale (1 = *completely disagree*; 9 = *completely agree*). The support-seeker disclosing self-concept information ($M = 5.00, SD = 1.20$) was

perceived as more anonymous compared to support-seeker disclosing demographic information ($M = 4.68$, $SD = 1.23$), $t(524) = 2.47$, $p < .05$.

8. In the experiment, we also measured participants' liking toward the support seeker with three items (e.g., "The person comes across as a likeable person") on a 9-point scale (1 = *completely disagree*; 9 = *completely agree*). Participants who read the support-seeking post containing core self-disclosure ($M = 6.23$, $SD = 1.03$) did not differ from those in the demographic disclosure condition ($M = 6.00$, $SD = 1.23$) in terms of their liking of the support-seeker, $t(524) = 1.99$, *ns*.

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