Language Style Matching as a Predictor of Perceived Social Support in Computer-Mediated Interaction Among Individuals Coping With Illness

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Abstract

Several forms of computer-mediated communication (e.g., online support groups, blogs, social network sites) have been shown to be important resources for social support among individuals coping with illness. The reported study attempts to better understand social support processes in these settings by examining the implications of language style matching—a form of interpersonal coordination involving the degree to which speakers match one another's use of function words (e.g., articles, prepositions, pronouns). Language style matching among a sample of health bloggers and their readers over a 3-month period was tested as a predictor of bloggers' perceptions of support available from their readers. The results show that language style matching contributed to bloggers' perceptions that their readers are willing and able to serve as a resource for specific forms of social support.

Keywords

social support, computer-mediated communication, language style matching

Social support is a valuable asset when coping with illness (Cohen, 1988; Goldsmith & Albrecht, 2011). Indeed, social support has been shown to have salutary effects on physiological functioning (Uchino, 2004) and psychosocial well-being (Smith, Fernengel, Holcroft, Gerald, & Marien, 1994). Although much of the research related

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to supportive communication has been conducted in the context of face-to-face interaction (for a review, see Goldsmith, 2004; Goldsmith & Albrecht, 2011), a growing body of scholarship has examined the implications of various forms of computer-mediated communication for exchanging social support (High & Solomon, 2011). Online support groups (Tanis, 2009), blogs (Rains & Keating, 2011), and social network websites (Wright, Rosenberg, Egbert, Ploeger, & Bernard, 2012) can serve as a valuable support resource. These forms of computer-mediated communication make it possible to mitigate some of the challenges associated with seeking and providing support in face-to-face interaction (for a review, see Wright, Johnson, Averbeck, & Bernard, 2011).

Across the various types of computer-mediated communication used to exchange social support, one relatively common characteristic is the reduction in some social cues that are typically present when communicating face to face (Green-Hamann, Eichhorn, & Sherblom, 2011; Rains & Young, 2009; Wright & Bell, 2003). Because the interactions are text-based and it is not possible to see the facial expressions or hear the tone of others' voices, written discourse takes on an increasingly important role in computer-mediated support processes (Spottswood, Walther, Holmstrom, & Ellison, 2013; Tanis, 2008). This importance is reflected in the number of studies dedicated to classifying support messages (e.g., Braithwaite, Waldron, & Finn, 1999; Keating, 2013) and examining the effects of particular forms of language (e.g., Lieberman & Goldstein, 2006; Shaw, Hawkins, McTavish, Pingree, & Gustafson, 2006) used in online support groups. Although such research has been valuable in identifying characteristics of support messages, developing a complete understanding of social support in computer-mediated contexts requires considering the role of more subtle features of human interaction. There is reason to believe that processes occurring in face-to-face supportive exchanges such as interpersonal coordination (Jones & Wirtz, 2007; Trees, 2000) also play a role in computer-mediated interaction.

The present project examines the notion that interpersonal coordination in the form of language style matching contributes to perceptions of social support in computer-mediated interaction among adults coping with illness. Language style matching—a process in which speakers mimic one another's use of function words (e.g., adverbs, pronouns, prepositions)—fosters rapport and shared understanding (Gonzales, Hancock, & Pennebaker, 2010; Ireland & Pennebaker, 2010). In computer-mediated support contexts, language style matching may contribute to perceptions that one's interaction partners are able and willing to provide emotional and informational support. Language style matching is examined among a sample of health bloggers and their readers over a 3-month period. Investigating language style matching makes it possible to advance scholarship on computer-mediated communication, social support, and interpersonal coordination in several important ways. Perhaps most important, studying language style matching can offer insights into how features of interaction contribute to perceptions of social support availability in computer-mediated contexts. More broadly, the results of this project contribute to scholarship exploring the role of behavior matching in support processes by considering an operating mechanism that links interpersonal coordination with support perceptions. Finally, this

project adds to the nascent body of language style matching research by considering its potential in health-related interactions.

Social Support and Computer-Mediated Communication

Social support is an umbrella term that refers to a number of distinct but interrelated constructs (for reviews, see Barrera, 1986; Gottlieb & Bergen, 2010; MacGeorge, Feng, & Burleson, 2011). This project focuses on the perceived availability of informational and emotional support from one's interaction partners in computer-mediated contexts. As perceptual variables, informational support involves feeling that one has access to useful feedback and guidance from specific others, whereas emotional support consists of the belief that specific others are willing and able to provide caring and understanding (Helgeson, 1993; Schaefer, Coyne, & Lazarus, 1981). Perceived support availability is a fairly robust predictor of beneficial health-related outcomes (Gruenewald & Seeman, 2010; Holt-Lunstad, Smith, & Layton, 2010; Uchino, 2009). Moreover, prior research has demonstrated that it can be influenced by computer-mediated interactions over time (Barrera, Glasgow, McKay, Boles, & Feil, 2002).

Several forms of computer-mediated communication have become relatively widely used resources for support. A survey by the Pew Internet and American Life Project (Fox, 2011) showed that 20% of adult American Internet users sought support online from a peer during 2010. Research examining the implications of computer-mediated forms of support has largely focused on the reasons individuals choose to acquire support online and the outcomes of computer-mediated support. One important factor motivating people to seek support online appears to be a preference for support from weak ties (Wright & Miller, 2010). Weak ties can be particularly valuable when strong ties such as family and friends are unable or unwilling to provide support (Adelman, Parks, & Albrecht, 1987). Relative to strong ties, weak ties can be more objective, provide novel information, and present less potential for role conflict (Wright & Miller, 2010). Several studies have shown that individuals who prefer weak-tie support are more inclined to participate in computer-mediated support groups or experience greater benefits from their participation (Wright & Rains, 2013; Wright et al., 2012). Other research indicates that factors such as anonymity (Tanis, 2008), similarity (Wright, 2002), and accessibility (Walther & Boyd, 2002) are additional reasons that individuals may choose computer-mediated resources for acquiring social support.

There is also evidence that computer-mediated support is associated with beneficial outcomes. Rains and Young (2009), for example, conducted a meta-analytic review of research on computer-mediated support group interventions and found that participation resulted in increased social support, quality of life, and self-efficacy among members. More recently, Turner and colleagues showed that emotional support in e-mail messages from a health provider was associated with improvements in gylcemic control among diabetes patients (Turner et al., 2013). Beyond these studies, the results from several works offer evidence that the benefits of social support extend to support acquired online (e.g., Oh & Lee, 2012; Sanford, 2010; Wright & Rains, 2013).

Despite the growing body of research examining social support in computer-mediated contexts, the role of computer-mediated communication in support processes has received relatively little attention from scholars (for exceptions, see Caplan & Turner, 2007; Wright & Bell, 2003). Yet, computer-mediated communication is distinct from face-to-face interaction in several important ways. Perhaps most notably, several types of nonverbal behavior such as facial expressions and eye contact are restricted in computer-mediated communication. Walther and Parks (2002) identify the reduction in social cues as one of two "structural aspects of social support" that are "fundamentally change[d]" (p. 545) by computer-mediated communication. A consequence of the reduction in social cues is the potential for increased emphasis to be placed on written discourse (Rains & Keating, 2011; Spottswood et al., 2013; Tanis, 2009). A number of content analyses have been conducted to examine the types of support messages shared in computer-mediated contexts (e.g., Dunham et al., 1998; Eichhorn, 2008; Keating, 2013). Informational support and emotional support are typically the most common types of support messages found in these studies (Braithwaite et al., 1999; Coulson, Buchanan, & Aubeeluck, 2007; Ginossar, 2008; Keating, 2013).

Beyond the explicit types of support messages shared, there is reason to believe that more subtle features of interaction might play an important role in social support processes in computer-mediated contexts. Social information processing theory (Walther, 1992) was designed to explain relationship development in computer-mediated interaction. Central to this theory is the notion that people adapt to the reduced social cues available. One way that individuals compensate is by placing greater emphasis on "linguistic or textual cues" (Walther, 1992, p. 75). Social information processing theory suggests that, despite the reduction in social cues, features of face-to-face supportive interactions may continue to be important during computer-mediated communication and the role of written discourse is particularly critical to consider. The implications of one such feature of interaction—interpersonal coordination in the form language style matching (Gonzales et al., 2010; Ireland & Pennebaker, 2010; Ireland et al., 2011)—are next discussed to provide a foundation for the study hypotheses.

Interpersonal Coordination and Language Style Matching

Interpersonal coordination is generally defined as "behaviors in an interaction that are nonrandom, patterned, or synchronized in both timing and form" (Bernieri & Rosenthal, 1991). Research on this topic has a broad and rich history (Burgoon, Stern, & Dillman, 1995; Chartrand & Lakin, 2013; Giles, Coupland, & Coupland, 1991). One important form of interpersonal coordination is behavior matching, which involves mimicking others' behavior (Chartrand & Lakin, 2013). Although behavior matching can occur intentionally, a significant amount of research has examined matching that is relatively automatic and largely nonconscious in that it does not require excessive planning, conscious control, or intent (Bavelas, Black, Lemery, & Mullett, 1986; Chartrand & Bargh, 1999; Levelt & Kelter, 1982). The automaticity of

behavior matching is argued to stem from evolutionary roots as it allowed individuals to affiliate and live harmoniously with others (Lakin, Jefferis, Cheng, & Chartrand, 2003). Nonconscious or automatic forms of behavior matching have been shown to influence perceptions of others and interactions despite the fact that interactants report not being aware of its occurrence (Ashton-James, van Baaren, Chartrand, Decety, & Karremans, 2007; Chartrand & Bargh, 1999).

It is widely accepted that coordination in the form of behavior matching is related to rapport in interpersonal interaction (Bernieri & Rosenthal, 1991; Tickle-Degnen & Rosenthal, 1990). Rapport is a relational property that results from human interaction and is experienced as a sense of harmony between communication partners (Tickle-Degnen & Rosenthal, 1990). Rapport involves three dimensions: mutual attentiveness, positivity, and coordination. Scholars have recently argued that rapport also extends to physical sensations stemming from interpersonal coordination (Vacharkulksemsuk & Fredrickson, 2012). Given the association between interpersonal coordination and rapport (Bernieri & Rosenthal, 1991; Chartrand & Lakin, 2013), it is not surprising that interpersonal coordination has been linked to social support in prior research (Jones & Wirtz, 2007; Trees, 2000). Researchers examining this connection have largely focused on the coordination of nonverbal behavior (Bavelas et al., 1986; Jones & Wirtz, 2007; Valdesolo & DeSteno, 2011).

Language style matching is a form of interpersonal coordination (and, more specifically, behavior matching) that has received attention in recent years (Gonzales et al., 2010; Ireland & Pennebaker, 2010; Ireland et al., 2011). Language style matching is rooted in the broader tradition of research on behavioral mimicry (Chartrand & Lakin, 2013) and might be considered a special case of convergence in communication accommodation theory (Giles et al., 1991). The focus of language style matching is on the degree to which interactants coordinate their use of function words such as prepositions, articles, conjunctions, auxiliary verbs, and pronouns. Function words are important because their meaning is largely context dependent. Ireland and Pennebaker (2010) describe function words as "place holders" (p. 551) whose meaning is unique to communication partners during an interaction. For example, in the sentence, "Is it better?," the words "is" and "it" are function words. Understanding what these function words refer to requires shared knowledge between interaction partners.

Language style matching is thought to occur as individuals move toward shared psychological states (Ireland et al., 2011). Because function words require mutual knowledge to use and understand, coordination of their use during social interaction is argued to reflect and contribute to common ground between speakers and rapport (Ireland & Pennebaker, 2010; Ireland et al., 2011). Like other forms of interpersonal coordination, language style matching may be "both a means to and product of affiliation" (Ireland & Pennebaker, 2010, p. 567). The degree to which individuals match one another's use of function words has been shown to be associated with several interactional and relational outcomes. Language style matching predicts romantic interest during speed dating interactions (Ireland et al., 2011), cohesiveness in computer-mediated groups (Gonzales et al., 2010), and relationship changes among famous writers (Ireland & Pennebaker, 2010).

Taken together, previous research offers evidence that, in addition to being a pervasive feature of human interaction (Chartrand & Lakin, 2013), interpersonal coordination can play an important role in social support processes (Jones & Wirtz, 2007; Trees, 2000; Valdesolo & DeSteno, 2011). In the context of computer-mediated interaction, however, many of the nonverbal cues that typically serve as the basis for coordination (e.g., smiling, head nodding, body orientation) are reduced or absent. Yet, social information processing theory (Walther, 1992) suggests that individuals are savvy encoders and decoders and can adapt to this reduction in social cues. Given the increased salience of written discourse (Rains & Keating, 2011; Tanis, 2009), linguistic forms of interpersonal coordination could be particularly important in computer-mediated interaction. The propensity to engage in behavior matching may be manifested in people's use of function words. In the context of computer-mediated interaction among people coping with illness, language style matching may foster rapport between interactants and contribute to perceptions that one's interaction partners are able and willing to provide social support. Two hypotheses are proposed in the following section to test this notion.

Hypotheses

Although several content analyses have documented the explicit types of social support messages shared in computer-mediated contexts (Braithwaite et al., 1999; Ginossar, 2008; Keating, 2013), the unique implications associated with the reduced social cues available in these settings warrant additional attention (Caplan & Turner, 2007; Walther & Parks, 2002). In text-based environments where many of the nonverbal cues present in face-to-face interaction are reduced or eliminated, features of interaction may play a particularly important role in influencing support perceptions. Interpersonal coordination in the form of language style matching has promise as a factor that could explain individuals' perceptions of their interaction partners as potential support resources. A key outcome of language style matching (Ireland & Pennebaker, 2010)—and interpersonal coordination more generally (Bernieri & Rosenthal, 1991; Chartrand & Lakin, 2013; Tickle-Degnen & Rosenthal, 1990)—is rapport. As previously noted, rapport is a product of human interaction and the three dimensions are perceived as feelings of "mutual interest and focus . . . friendliness and warmth . . . [and] balance and harmony" (Tickle-Degnen & Rosenthal, 1990, p. 286). Trees (2000) describes rapport as a "bridge" (p. 246) between interpersonal coordination and social support.

Through fostering rapport, language style matching during computer-mediated interactions among individuals coping with illness could contribute to perceptions that one's interaction partners are available to provide emotional and informational support. The sense of mutual engagement and warmth that is associated with rapport could encourage the belief that one's interaction partners are motivated and able to serve as sources of empathy and understanding. Moreover, in perceiving others to be invested in and attentive to one's circumstances, it seems reasonable that one might also believe that these others could be called on for—and able to effectively provide—advice and

feedback. To summarize, language style matching during computer-mediated interaction among adults coping with illness is predicted to be positively associated with support seekers' perceptions that their communication partners are an available resource for emotional support (Hypothesis 1) and informational support (Hypothesis 2).

Method

Overview and Study Context

The implications of language style matching for computer-mediated social support were examined in the context of exchanges among health bloggers and their readers over a 3-month period. A blog is a routinely updated web-based journal with entries published in reverse chronological order (Herring, Scheidt, Bonus, & Wright, 2004). Health blogs were selected as the focus of this project for two primary reasons. First, health blogs have been shown to be an important resource for acquiring social support (Sanford, 2010; Sundar, Edwards, Hu, & Stavrositu, 2007). Through sharing their experiences in their blog, bloggers can elicit social support from their readers. Second, relative to other forms of computer-mediated communication (e.g., online support groups), health blogs are particularly amenable to examining language style matching. The health blogs examined in this project consisted of personal-journal type blogs—the most popular type of health-related blog (Miller & Pole, 2010). Unlike online support groups, personal-journal health blogs are dedicated to documenting and discussing a single individual's illness experience. Moreover, the interactions between bloggers and readers are well-defined. Personal-journal blogs typically include a space for readers to post comments in response to specific contributions made by bloggers. Each post made by bloggers, and corresponding reader comments, represents a single exchange that is distinct from other post/comments pairs.

The posts and comments from 99 health bloggers were examined over a 3-month period leading up to the date that bloggers completed the study questionnaire. The change in language style matching between bloggers and their readers over the 3-month period was used to predict bloggers' perceptions of emotional and informational support available from their readers. Examining changes in language style matching makes it possible to conduct a nuanced test of the hypotheses and show that perceptions of social support vary as language style matching increases and decreases.

Sampling Procedure and Respondents

In order to identify a diverse sample of health bloggers, a total of 176 separate web searches were conducted. Each search involved using Google or Yahoo!'s search engine and 1 of 22 search phrases to examine 1 of 4 popular blog-hosting websites. The four blog-hosting websites (i.e., blogspot.com, wordpress.com, typepad.com, and livejournal.com) were selected because they require no computer programming knowledge to operate. The 22 search phrases included 1 of 2 qualifiers (i.e., "dealing with"; "living with") paired with 1 of 11 terms referring to general health (e.g.,

disability, disease, illness, disorder) or specific, common conditions (e.g., cancer, depression, heart disease, HIV). The general health terms were used to ensure that a wide range of health issues were represented, whereas the more specific conditions were selected because they represent common causes of mortality or are otherwise serious and prevalent in the United States (Beck & Alford, 2009; Centers for Disease Control and Prevention, 2009). Because each individual search returned up to 1,000 results, 100 results were randomly selected from every search and manually reviewed to determine whether any of the results met the criteria of a health blog (i.e., a blog dedicated to discussing its author's illness experience) and had been updated recently. These searches resulted in 253 blogs. The blogroll (i.e., list of other blogs that the writer presumably recommends) from each of these blogs was then reviewed and an additional 131 health blogs were identified. The authors of all 384 health blogs were invited to complete an online questionnaire about their experiences blogging.

A total of 129 bloggers completed the web-based questionnaire. However, at the time that the bloggers' posts and readers' comments were collected, 11 of the blogs had been removed or were not publicly available. An additional 19 blogs were excluded because they contained no reader comments and/or posts in 2 adjacent months during the 3-month period prior to the date bloggers completed the questionnaire (which was necessary to compute changes in language style matching). The final sample included in the analyses contained 99 bloggers/blogs. There were no differences in perceived emotional or informational support between the 99 bloggers who had their data included in the final sample and the other 30 bloggers who completed the questionnaire.

Bloggers' ages ranged from 18 to 87 years ($M = 43.61$, $SD = 12.61$), and approximately 75% were female. Two thirds of the bloggers had completed college or reported a higher level of education. Bloggers rated their current health as moderate ($M = 4.00$, $SD = 1.52$) on a 7-point scale with the anchors *poor* (1) and *excellent* (7). All bloggers experienced and wrote about one or more of a wide variety of health conditions ranging from Alzheimer's disease, Asperger's syndrome, and various forms of cancer to Sjogren's syndrome, transverse myelitis, and ulcerative colitis. During the 3 months (90 days) prior to completing the questionnaire, the sample as a whole was actively engaged in blogging. Bloggers made a mean of 33.58 posts ($SD = 29.74$; range = 2-121) and there was a mean of 90.52 reader comments ($SD = 158.72$; range = 3-993) per blog. Together, bloggers and their readers wrote a total of almost 1.75 million words during the 3-month period.

Measures

Language style matching. Following prior research (Gonzales et al., 2010; Ireland & Pennebaker, 2010), language style matching was operationalized as the degree to which bloggers and their readers used a similar proportion of nine classes of function words. The nine classes included personal pronouns, impersonal pronouns, articles, conjunctions, prepositions, auxiliary verbs, high-frequency adverbs, negations, and quantifiers (Ireland & Pennebaker, 2010). Change in language style matching between

bloggers and their readers was examined during the 3-month period prior to when bloggers completed the study questionnaire. This time period was selected because it made it possible to separate bloggers' posts and readers' comments into three equal segments and represented the maximum amount of data that could be collected given the resources available. The posts made by bloggers and comments submitted by readers were recorded for each blog in three 30-day segments. The Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, & Francis, 2007) computer program was used to identify the percentage of each class of function words (e.g., prepositions, pronouns, articles) used by bloggers and readers during each of the three 30-day segments. Language style matching scores were then computed for each class of function word using the formula supplied by Ireland and colleagues (2011). Using the article category as an example, style matching was computed as follows:

$$\text{Language style matching}_{\text{article}} = 1 - \left[\frac{\left(\left| \text{article}_{\text{blogger}} - \text{article}_{\text{reader}} \right| \right)}{\left(\text{article}_{\text{blogger}} + \text{article}_{\text{reader}} \right)} \right].$$

The variables $\text{article}_{\text{blogger}}$ and $\text{article}_{\text{reader}}$ refer to the percentage of words written by each blogger and their readers that consisted of articles. This formula reflects the idea that language style matching involves the degree to which two speakers use a similar proportion of function words in their discourse. After the language style matching score was identified for each category, the mean of the nine categories was then computed within each 30-day segment.

As previously noted, changes in language style matching over the 3-month period were examined in this project in order to conduct a more nuanced test of the study hypotheses. To compute change in language style matching, differences in overall language style matching scores between adjacent 30-day segments were first calculated (e.g., the overall score from Month 3 was subtracted from the score for Month 2); these difference scores reflect the increase or decrease in language style matching during adjacent months. The mean change in language style matching between bloggers and readers across the two pairs of adjacent months (i.e., Months 1 and 2; Months 2 and 3) was then computed ($M = -0.01$, $SD = 0.07$; range $= -.31$ to $+.29$). Positive values for this measure indicate that language style matching generally increased during the 3 months prior to when bloggers completed the study questionnaire.

Social support. Bloggers' perceptions of social support availability were assessed using the Medical Outcomes Survey (MOS) social support survey (Sherbourne & Stewart, 1991). Four items were used to evaluate each of the two types of social support perceived by bloggers specifically from their readers. Sample items tapping emotional support include the following: "I have blog readers to share my most private worries or fears with" and "I have blog readers who understand my problems." Sample items tapping informational support include the following: "I have blog readers whose advice I really want" and "I have blog readers to turn to for suggestions about how to deal with a personal problem." All ratings were made on a 7-point scale with larger

values indicating a greater quantity of support available. Mean scores were computed for the measures of emotional ($M = 5.12$, $SD = 1.37$, α = .83) and informational ($M = 5.03$, $SD = 1.30$, α = .77) support from blog readers.

Control variables. Eight control variables were included in the analyses to account for their potential influence on perceptions of social support. Because prior research has shown differences in social support based on *age* (Segrin, 2003), *sex* (Burrell, 2002), and one's *change in health* (Cohen, 1988) as well as differences in health based on *education* (House et al., 1994), these four factors were evaluated and used as control variables. Descriptive information about respondents' age, sex, and education was provided in describing the sample. Bloggers' change in health was assessed using a single item from the MOS Short Form (Ware & Sherbourne, 1992), which asked bloggers to rate how their health had changed during the prior 6 weeks on a 5-point scale with the anchors *gotten a lot worse* (1) and *gotten a lot better* (5). Bloggers rated their health as fairly stable during the previous 6 weeks ($M = 2.91$, $SD = 0.98$). In addition to these variables, the amount of time each blog had been in operation (i.e., *total days blogging*) was used as a control variable to account for any differences between more and less experienced bloggers; the number of days since each respondent began his or her blog was identified ($M = 669$ days, $SD = 555$). Respondents were also asked to estimate the *percentage of their readers consisting of family and friends* ($M = 24.24\%$, $SD = 26.03$) and this measure was used to account for differences in bloggers' audiences (Stefanone & Jang, 2007). Bloggers with a larger number of readers who were strong ties such as family and friends may have perceived systematically different levels of support available from their readers than bloggers whose audience was largely composed of weak ties. Finally, changes in the mean number of respondents' *blog posts* ($M = -0.14$, $SD = 5.75$) and their readers' *comments* ($M = -0.10$, $SD = 8.19$) during the 3 months prior to completing the study questionnaire were evaluated and included as control variables. These measures tap changes in respondents' and their readers' engagement; positive values indicate an increased number of posts or comments. Including this set of control variables in the analyses made it possible to demonstrate that any relationships between language style matching and the two types of social support were not an artifact of these factors.

Results

Preliminary Analyses

Prior to testing the hypotheses, the data were first screened following the recommendations established by Tabachnick and Fidell (2001). The measures evaluating the percentage of bloggers' readers who were family and friends and the number of days respondents had been operating their blogs (i.e., total days blogging) were positively skewed. These two variables were square-root transformed, and all subsequent analyses involving these variables were conducted using the transformed measures.

Table 1. Change in Language Style Matching as a Predictor of Perceived Emotional and Informational Support.

	Emotional support			Informational support		
	β	t	ΔR²	β	t	ΔR²
Block 1: Control variables			.10			.16*
Age	−.17	1.53		−.18†	−1.68	
Sex (0 = female; 1 = male)	−.23*	2.15		−.22*	−2.07	
Education	−.07	−0.68		−.19†	−1.83	
Change in health	.004	0.04		.13	1.34	
Percentage of readers consisting of family and friends	−.05	−0.46		.01	0.11	
Total days blogging	.02	0.17		.08	.76	
Change in blog posts	−.02	−0.15		−.09	−0.85	
Change in reader comments	−.08	−0.66		−.05	−0.44	
Block 2: Change in language style matching between bloggers and their readers	.27*	2.50	.06*	.19†	1.85	.03†

Note. The results for each block are reported when that block was added to the model. Model summaries: perceived emotional support, $F(9, 85) = 1.87$, $p = .07$, $R^2 = .17$; perceived informational support, $F(9, 85) = 2.26$, $p < .05$, $R^2 = .19$.
†$p < .10$. *$p < .05$.

Language Style Matching as a Predictor of Perceived Social Support

Hypotheses 1 and 2 predicted that language style matching would be positively associated with perceptions of emotional and informational support available from readers. Two identical regression models, with the exception of the outcome variable, were constructed to test these hypotheses. In both models, the eight control variables (i.e., age, sex, change in health, education, total days blogging, percentage of readers consisting of family and friends, mean change in blog posts, and mean change in reader comments) were entered in the first block. The measure of mean change in language style matching between bloggers and their readers was entered in the second block.

The results are reported in Table 1. After accounting for the variance explained by the control variables, change in language style matching between bloggers and their readers was positively associated with bloggers' perceptions of emotional support. This result supports Hypothesis 1. The association between change in language style matching and informational support did not meet the conventional criterion for statistical significance; the *p* value for the beta coefficient was .068. Hypothesis 2 was not supported.

Discussion

Given the importance of social support in coping with illness and the number of computer-mediated contexts in which it may be acquired, it is essential for scholars to

better understand the implications of computer-mediated communication for social support processes. The present study examined interpersonal coordination in the form of language style matching as a factor contributing to support perceptions among a sample of health bloggers. The findings and their implications for research on computer-mediated communication, social support, and language style matching will be considered in the following paragraphs.

Language Style Matching and Computer-Mediated Support

Change in language style matching between health bloggers and their readers predicted bloggers' perceptions of emotional support available from their readers. Increased language style matching during the 3 months prior to when bloggers completed the questionnaire was associated with greater levels of perceived emotional support available from readers. It should be noted that eight control variables were included in the analyses in an effort to rule out the possibility that any associations between language matching and support perceptions were spurious. After these control variables were accounted for, change in language style matching explained 6% of the variance in perceived emotional support. The results regarding informational support followed the same trend. Although change in language style matching explained 3% of the variance in perceived availability of informational support, the p value for the beta coefficient ($p = .068$) did not meet the conventional criterion for statistical significance. Taken together, the results from this study are generally consistent with the notion that language style matching contributes to perceived support during computer-mediated interaction among individuals coping with illness.

Two aspects of the preceding findings warrant further consideration. First, although the relationships between language style matching and the two support variables were in the expected direction, only the association involving emotional support was statistically significant and language style matching explained twice as much variance in emotional support. This finding suggests that the relationship between language style matching and perceived emotional support could be more robust than the association between matching and perceived informational support. The defining properties of rapport—mutual attentiveness, positivity, and coordination (Tickle-Degnen & Rosenthal, 1990)—might be more conducive to fostering perceptions that others are available to serve as a resource for emotional support than informational support. Second, there was a substantial amount of unexplained variance in both models. As a nonconscious process (Ireland & Pennebaker, 2010), it is not surprising that language style matching explained relatively modest amounts of variance in perceived emotional and informational support. Yet, this also raises questions about other factors that might explain bloggers' perceptions of support available from their readers. The content of the support messages shared by readers and the dynamics of blogger-reader relationships are good candidates to help more fully explain bloggers' support perceptions.

The findings from this project have several important implications for research on computer-mediated communication, social support, and interpersonal coordination. First, the results offer insights into the implications of the reduction in social cues associated with computer-mediated communication for social support. Prior research

has examined the explicit types of support messages exchanged in computer-mediated contexts, (e.g., Braithwaite et al., 1999; Dunham et al., 1998; Eichhorn, 2008; Keating, 2013). Yet, the results of this study suggest that more subtle features of interaction that play a role in face-to-face supportive exchanges also warrant attention. Despite the reduction in social cues that effectively make it impossible to share many of the nonverbal behaviors that serve as a basis for coordination during face-to-face interaction, interpersonal coordination persisted in computer-mediated interactions in the form of language style matching and contributed to bloggers' perceptions of social support available from their readers. More broadly, the results suggest that the structural aspects of social support altered by the reduction in social cues (Walther & Parks, 2002) do not require completely re-thinking social support in this context as much as considering novel manifestations of processes common in face-to-face interaction. The reduction in social cues during computer-mediated interaction may simply increase the importance of examining those cues that are available in written discourse (Walther, 1992).

Second, the results add to what is known about interpersonal coordination and social support. Existing research has shown that interaction synchrony can influence perceptions of received support (Trees, 2000) as well as compassion among support providers (Valdesolo & DeSteno, 2011). The implications of behavior matching, however, have received less attention. In one of the few studies addressing this issue, Jones and Wirtz (2007) showed that participants discussing a distressing event tended to match the nonverbal behavior of a confederate trained to provide social support. The present study contributes to this body of research by demonstrating that linguistic forms of behavior matching can have important implications for perceived support and identifying rapport as an operating mechanism. Although the data from this study were limited to interactions among bloggers and their readers, it is plausible that language style matching may also influence support perceptions in face-to-face interactions. Building from this study, future research might examine language style matching in the context of face-to-face health-related communication. Future research would also be valuable to further examine the potential role of rapport by directly evaluating it as a mediator of the relationship between language style matching and support perceptions. Finally, it would be valuable to consider physical dimensions of rapport. Researchers have recently argued that rapport has a physiological component that is integrated with the perceptions of communicators and their shared movements (Vacharkulksemsuk & Fredrickson, 2012).

Third, this project contributes to the nascent body of scholarship on language style matching. Research has shown that language style matching can play a role in the context of romantic relationships (Ireland et al., 2011), work groups (Gonzales et al., 2010), and friendships (Ireland & Pennebaker, 2010). This study extends scholarship on language style matching to the context of health communication and social support. Given prior studies documenting connections between forms of nonverbal behavior matching and pro-social behavior (e.g., Ashton-James et al., 2007; Valdesolo & DeSteno, 2011), language style matching could play an important role in other forms of helping behavior beyond social support. In addition to attempting to replicate the association between language style matching and support perceptions reported in this study, future research might explore the implications of language style matching for

helping behavior more broadly. This project also contributes to research on language style matching by highlighting the role of rapport. Although rapport is identified in previous research on language style matching (Ireland & Pennebaker, 2010), it is typically considered to be one factor among many. This project considers rapport as a central mechanism that could explain the outcomes of language style matching in the context of social support.

The results of this project also have practical implications that warrant consideration. One such implication involves the potential to use language style matching as a tool for assessing online support communities. If a robust association between language style matching and support perceptions can be demonstrated over the course of several studies, then it could be used as a metric for objectively evaluating the potential existence and relative adequacy of support in online communities. It might be possible to develop automated tools for capturing and analyzing the exchanges within a given community and ultimately evaluating the quality of that community. It also seems possible that language style matching might be employed by health practitioners such as counselors or therapists. Although language style matching is argued to be a largely automatic process, it seems possible that, as with other forms of nonverbal mimicry, people can become more effective at matching over time and with training.

Limitations

A few limitations of this study should be considered. Although bloggers' posts and readers' comments were collected over a 3-month period prior to the date that bloggers completed the study questionnaire and involved a significant volume of discourse, the data do not permit causal inference. It is not possible to definitively show that language style matching caused perceptions of social support availability. Yet, the data show that these two variables are related and that perceptions of emotional support are associated with increases/decreases in language style matching. It should also be noted that the items in the support measures asked bloggers to report on their perceptions of support available from their readers. However, the data used to construct the measure of language style matching involved only those readers who actually posted comments. Given the difficulty bloggers face in knowing their audience, it seems likely that commenters would be the most salient audience members to bloggers.

In addition, the analyses conducted for this project do not make it possible to demonstrate that readers were mimicking bloggers. It is possible that bloggers may have been mimicking the language style used by readers in a comment they made in response to a previous blog entry. However, there are several reasons to believe that readers were mimicking bloggers. The centerpiece of the blogs examined in this sample was the blogger's discussion of his or her experiences. As such, the blogger's role in initiating and serving as the focus of the interaction suggests that he or she should be the one being mimicked. Additionally, readers' comments typically follow bloggers' entries in temporal order. Because they must first read the bloggers' entry prior to commenting and effectively responding to the thoughts and ideas contributed by bloggers, it seems reasonable to expect that readers were mimicking bloggers. Nonetheless, future research would be valuable to examine this issue empirically.

Finally, several of the blogs and bloggers were excluded from the analyses because they lacked posts and/or comments in two adjacent months during the 3-month period during which blogs were examined. However, in order to compute changes in language style matching, it was necessary to have both bloggers' posts and readers' comments in at least 2 adjacent months. Notably, there were no differences in either of the two types of support between bloggers who were excluded and those included in the final sample. Yet, it was not possible to evaluate whether there were differences between individuals who did and did not respond to the initial invitation to participate in the study. The volume of discourse generated by respondents made it impossible to examine the content of the blogs written by individuals who were invited but did not complete the study questionnaire.

Conclusion

Several forms of computer-mediated communication have created novel opportunities for individuals coping with illness to acquire and share social support. This study attempted to examine one dimension of computer-mediated interaction that may play an important role in support processes. The results offer evidence that interpersonal coordination in the form of language style matching contributes to perceptions of the availability of emotional support in interactions between health bloggers and their readers. Given the likelihood that various forms of computer-mediated communication will continue to provide an outlet to exchange support, it is critical to further explore their unique implications. Such efforts will help to foster a more complete understanding of social support processes and better prepare us to capitalize on those forms of computer-mediated communication developed in the future.

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