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Examining the quality of social support messages produced face-to-face and in computer-mediated communication: The effects of hyperpersonal communication

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ABSTRACT

The hyperpersonal communication model was used to investigate the implications of the reduced social cues in computer-mediated communication (CMC) for the production of social support messages. Participants were randomly assigned to interact with a confederate seeking help about a problem for which the confederate was or was not responsible. The interactions took place either face-to-face or in one of two CMC conditions. The results were partially consistent with the intensification effect proposed in the hyperpersonal model. Participants evaluated the confederate most negatively, but produced the highest quality support messages, in the CMC condition with visual anonymity followed by the CMC condition and face-to-face condition. Participants' evaluations of the confederate were also influenced by the confederate's responsibility for their problem.

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Social support is an indispensable coping resource (for reviews, see Goldsmith, 2004; Uchino, 2004). During the past two decades, various forms of computer-mediated communication (CMC) – involving Internet-based technologies that allow dyads or groups to engage in text-based interaction – have become a valuable means for millions of adults to acquire peer support (Fox & Duggan, 2013; Fox & Rainie, 2000). Scholars have taken note of this trend and a growing body of research has emerged addressing factors that contribute to CMC use for seeking support, support received and available in CMC contexts, the efficacy of CMC support interventions, and several other issues (for reviews, see Rains & Wright, 2016; Wright, 2016). Despite the contributions these efforts have made to scholars' understanding of social support both online and offline, several important topics have received insufficient attention. One foundational issue involves the role of the communication medium in supportive interaction and, in particular, support message production (Caplan & Turner, 2007; Rains & Wright, 2016).

Supportive interaction in CMC contexts like online communities, blogs, and social network sites is distinguished by a reduction in social cues relative to face-to-face

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communication (Caplan & Turner, 2007; Wright, 2016). The inability to observe the appearance and/or some nonverbal behaviors of one's interaction partner in CMC has important consequences for supportive communication. Drawing from the hyperpersonal communication model (Walther, 1996), several scholars have speculated that the reduced social cues in CMC could foster hyperpersonal effects that influence support processes (Caplan & Turner, 2007; Tanis, 2008; Wright, 2016; Wright & Bell, 2003). Relative to face-to-face interaction, support providers may develop exaggerated impressions and responses to support seekers as they "fill in the blanks" stemming from the reduced social cues in CMC (Walther, 1996; Walther, Van Der Heide, Ramirez, Burgoon, & Pena, 2015). These exaggerated or intensified responses are consequential because they should impact the quality of support messages produced by providers in CMC relative to face-to-face interaction. In other words, the reduced social cues in CMC could contribute to hyperpersonal processes that lead support providers to produce more or less effective support messages than in a commensurate face-to-face interaction. Despite its significant consequences, this possibility has been limited to speculation (e.g., Caplan & Turner, 2007; Tanis, 2008; Wright, 2016; Wright & Bell, 2003) and not subjected to a rigorous empirical test.

In this project, we use the hyperpersonal communication model (Walther, 1996) to investigate the implications of the reduced social cues in CMC relative to face-to-face communication for support message production and, in particular, the quality of support messages generated by providers in response to a help seeker. Beyond applying the hyperpersonal model to the context of support provision, we seek to extend the model by evaluating the influence of two distinct types of social cues involving appearance-related information and nonverbal behavior of the help seeker on support providers. We also examine the consequences of a seeker-related factor involving the help seeker's responsibility for his or her distress (Jones & Burleson, 1997; MacGeorge, 2001). Although the potential for this factor to influence support message production has received attention in previous research (Burleson, Holmstrom, & Gilstrap, 2005; Rains, Tsetsi, Akers, Pavlich, & Appelbaum, in press), its effects have not been tested in the context of dyadic interaction. This project advances research on supportive communication both online and offline by helping to better understand the role of the communication medium and support seeking request in shaping support provision efforts.

Social support and CMC

Supportive communication involves verbal and nonverbal behavior enacted to assist someone in need of aid (MacGeorge, Feng, & Burleson, 2011). Communication scholars have made significant strides in isolating the characteristics of high quality or helpful support messages (for a review, see MacGeorge et al., 2011). Verbal person-centeredness (Burleson, 1987) and politeness (Goldsmith, 1992) are two particularly important qualities. Whereas person-centeredness involves the degree to which a message validates and helps recipients to better understand their feelings (Burleson, 1987), politeness refers to linguistic strategies for preserving face during interaction (Brown & Levinson, 1987). A meta-analysis of more than 20 studies showed a robust positive relationship ($r = .61$) between the person-centeredness of support messages and beneficial outcomes (High & Dillard, 2012). Similarly, support messages containing politeness strategies

tend to be evaluated positively by recipients (Feng & MacGeorge, 2010; MacGeorge, Lichtman, & Pressey, 2002).

Although scholarship on supportive communication typically focuses on message qualities, researchers have begun to consider the role of the communication medium. A few researchers have evaluated the potential for aspects of CMC to influence the quality of support messages produced by support providers (Rains et al., in press; Youngvorst & High, 2018). In one experimental study, for example, participants wrote support messages containing higher levels of person-centeredness and used a greater number of politeness strategies when help seekers in an online community had a profile picture than when they had no picture (Feng, Li, & Li, 2016). In a related project, participants produced messages containing higher levels of person-centeredness when other community members had previously provided high-quality support in response to a help request compared to when community members offered low-quality support (Li & Feng, 2015).

One particularly important issue that has yet to receive sufficient attention involves the implications of the reduced social cues that typically distinguish CMC (Caplan & Turner, 2007; Rains & Wright, 2016). Unlike face-to-face communication, it is not possible to see the nonverbal behavior and/or appearance of one's interaction partner in most forms of CMC. The hyperpersonal communication model (Walther, 1996) suggests that this reduction in social cues could have significant consequences for supportive communication (Caplan & Turner, 2007; Tanis, 2008; Wright, 2016; Wright & Bell, 2003). The hyperpersonal model explains the role of senders, receivers, the communication medium, and feedback in contributing to communication "that is more socially desirable than we tend to experience in parallel [face-to-face] interactions" (Walther, 1996, p. 17). Senders use the features of the communication medium to engage in strategic self-presentation. The reduced social cues in CMC require receivers to "fill in the blanks" and lead them to develop exaggerated impressions of senders. The process continues via a feedback loop that serves to encourage this cycle (for a recent review, see Walther et al., 2015).

The receiver component of the hyperpersonal model is particularly relevant to support message production in CMC. Relative to face-to-face interaction, support providers may have exaggerated or intensified responses to help seekers that influence the quality of support they produce (Wright & Bell, 2003). Although no empirical tests have been conducted to directly evaluate this possibility (Wright, 2016), researchers have documented the intensification effect in a few studies comparing CMC and face-to-face interactions. Hancock and Dunham (2001), for example, had participant dyads complete a problem-solving task either face-to-face or using CMC and then evaluate the personality of their partner. Participants in the CMC condition reported more intense but less detailed impressions of their partner relative to the face-to-face condition. In more recent research, High and Solomon (2014) found that men who provided high levels of person-centered support were evaluated more positively in CMC relative to face-to-face. Females who provided low person-centered support were evaluated more negatively in CMC than face-to-face. The intensification effect has also been shown to extend beyond perceptions of communication behaviors. Although the content of confederates' self-disclosure was held constant in Jiang, Bazarova, and Hancock's (2013) experiment, it was perceived to be more intimate and disclosure intimacy was more likely to be reciprocated in CMC than face-to-face interaction.

The previously reviewed research has been essential to document and better understand the intensification effect in the hyperpersonal model (Walther, 1996). It offers some evidence to suggest that support providers' perceptions of and responses to support seekers may be exaggerated in CMC relative to face-to-face interaction (Wright & Bell, 2003). Beyond documenting this possibility, an additional goal of this project is to advance our understanding of why the intensification effect occurs. The specific mechanisms driving this effect warrant greater consideration (Jiang et al., 2013). One possibility stems from the types of information about one's interaction partner that serves as the basis for exaggerated impressions and responses.

At the heart of the impression-intensification effect in the hyperpersonal model is the need to "fill in the blanks" in CMC regarding one's interaction partner (Walther, 1996; Walther et al., 2015). CMC restricts one's ability to see others during interaction and thus requires one to make inferences. These blanks can involve at least two different classes of information: nonverbal cues available during interaction and cues associated with the physical appearance of one's partner (Walther, Slovacek, & Tidwell, 2001). As a form of text-based communication, CMC restricts some types of nonverbal cues like facial expressions by default (Lapidot-Lefler & Barak, 2012; Walther, 1996, 2006; Walther et al., 2015). CMC may also allow visual anonymity and limit one's ability to observe the physical appearance of one's interaction partner (Anonymous, 1998; Spears & Postmes, 2015).

The distinction between nonverbal information and appearance information is consequential because these two types of cues should make related but distinct contributions to the intensification effect. Nonverbal cues like gaze, facial expressions, and gestures are valuable for interaction coordination and message interpretation (for a review, see Burgoon, Guerrero, & Manusov, 2011). Researchers have shown, for example, that chronemic cues persisting in CMC can influence message interpretation (Kalman & Rafaeli, 2011). In the context of the hyperpersonal model, those nonverbal cues that are absent or reduced in CMC create opportunities for receivers to exaggerate the messages and information that are present (Walther, 1996). For instance, participants in one experiment who debated a dilemma via CMC reported making more aggressive responses and threats when they could not see a live video feed focused on their partner's eyes compared to when their partner's eyes were visible (Lapidot-Lefler & Barak, 2012).

Cues related to physical appearance offer insights about a communicator's identity, personality, and background (Walther et al., 2001). Appearance-related cues like physical attractiveness (Wang, Moon, Kwon, Evans, & Stefanone, 2010) and group membership (Spears & Postmes, 2015) can be used to understand one's interaction partners and their behavior. The absence of this type of information allows latitude in exaggerations related to one's interaction partner (Walther et al., 2001). Researchers studying intergroup behavior in CMC, for example, have consistently shown that visual anonymity can enhance the salience of shared social identity within CMC groups (Spears & Postmes, 2015). Visual anonymity stemming from the absence of information about the physical appearance of other group members coupled with a shared social identity leads individuals to have intensified feelings of similarity with the group.

Prior to making predictions about the implications of the hyperpersonal communication model (Walther, 1996) for support provision in CMC, it is first critical to briefly consider the unique properties that define help-seeking and distinguish this project from previous research (e.g., Hancock & Dunham, 2001; Jiang et al., 2013). Soliciting

assistance comes with significant costs (Lim, Teo, & Zhao, 2013), particularly involving the face of the help seeker (Goldsmith, 1992). In order to gain assistance, one must violate widely held beliefs about self-reliance (Fisher, Nadler, & Whitcher-Alagna, 1982) and share one's personal problems with others. This creates the potential for support providers to form negative impressions of help seekers (Feng & Burleson, 2006; Goldsmith & Parks, 1990). The act of seeking aid inherently raises questions about the competence and character of the help seeker. Through publicly recognizing their deficiencies along with their inability to resolve them independently, help seekers could appear unable or unwilling to effectively manage their own problems.

Although the intensification effect is typically conceptualized to result in more positive responses in the hyperpersonal model (Walther, 1996; Walther et al., 2015), the potential for exaggerated negative responses has been discussed (Walther et al., 2001) and documented in research examining support outcomes (High & Solomon, 2014). In the unique context of providing aid to a support seeker, the intensification effect (Walther, 1996) should generally lead support providers to evaluate seekers more negatively in terms of their competence and character and provide lower quality support containing lower levels of person-centeredness and fewer politeness strategies in CMC than face-to-face. The previously identified negative evaluations and responses that stem from hearing people discuss problems or deficiencies they cannot resolve independently (Feng & Burleson, 2006; Goldsmith & Parks, 1990; Lim et al., 2013) should be exaggerated in CMC. Moreover, if the intensification effect in the hyperpersonal model occurs as people "fill in the blanks" about their communication partner (Walther, 1996), then the largest effects should be observed when the greatest number of blanks exist. This logic leads us to predict that provider evaluations of help seekers will be most negative and the support messages they produce will contain the lowest levels of person-centeredness and the fewest politeness strategies in CMC when nonverbal cues are restricted *and* appearance information is absent due to visual anonymity (i.e., CMC + visual anonymity condition). The exclusion of these two types of information should lead to greater intensification than when only nonverbal information alone is restricted in CMC (i.e., CMC condition). The lowest levels of intensification should occur when no information is restricted such as during face-to-face interaction (i.e., face-to-face condition).

Hypothesis 1: Support providers' perceptions of help seeker (a) competence and (b) character will be most negative in the CMC + visual anonymity condition, less negative in the CMC condition, and least negative in the face-to-face condition.

Hypothesis 2: Support providers will produce support messages containing (a) lower levels of verbal person-centeredness and (b) fewer politeness strategies in the CMC + visual anonymity condition followed by the CMC condition and the face-to-face condition.

The nature of the support request

In addition to the communication medium, the nature of a help seeker's request for assistance should influence the quality of support produced by providers (MacGeorge et al., 2011). One influential factor is the help seeker's responsibility for his or her distress involving the degree to which a help seeker is perceived to be at fault for his or her circumstances (Jones & Burleson, 1997; MacGeorge, 2001; Rains et al., in press). Weiner's (1980) cognitive–emotion–action model offers a framework to understand the effects of

seeker responsibility. Weiner's (1980) model stems from the broader family of attribution theories and focuses specifically on explaining responses to help-seeking. It predicts that help providers make attributions about the source of a help seeker's problem that shape their emotional responses to the seeker and their efforts to provide assistance. The help seeker's responsibility for his or her predicament is one important factor help providers use to determine whether or not a help seeker is worthy of aid. When help seekers are perceived to be at fault or responsible for their problems, help providers are likely to feel anger or disgust and withhold assistance.

Researchers studying supportive communication have used the cognitive–emotion–action model (Weiner, 1980) to predict support providers' responses to help seekers. Across several studies, support providers evaluated lower quality support messages more positively (Jones & Burleson, 1997; MacGeorge et al., 2002) and produced support messages containing lower levels of person-centeredness (Burleson et al., 2005; Rains et al., in press) when help seekers were responsible for their distress compared to when seekers were not responsible. All of the preceding studies, however, involved asking participants to read hypothetical scenarios in which seeker responsibility was manipulated. The effects of a help seeker's responsibility for his or her distress on the quality of support produced by providers have yet to be examined during a live conversation.

In this study, we attempt to advance previous research by demonstrating that the effects of seeker responsibility extend to support message production during real-time interpersonal interaction. Following Weiner's (1980) cognitive–emotion–action model, providers should deem seekers less worthy of assistance and produce messages containing lower levels of person-centeredness and use fewer politeness strategies when seekers are responsible for causing their distress compared to when they are not responsible. In addition to the quality of support messages they produce, Weiner's (1980) cognitive–emotion–action model suggests that responsibility should influence providers' evaluations of seekers. Soliciting aid generally involves recognizing that one is incapable of resolving one's difficulties independently (Feng & Burleson, 2006; Fisher et al., 1982; Lim et al., 2013) and being responsible for one's distress should further raise questions about one's ability and willingness to effectively manage one's problems. Seekers who are responsible for their distress should be perceived to have lower levels of competence and character than seekers who are not responsible.

Hypothesis 2: Support providers' perceptions of help seeker (a) competence and (b) character will be more negative when seekers are responsible for their distress than when they are not responsible.

Hypothesis 3: Support providers will produce support messages containing (a) lower levels of verbal person-centeredness and (b) fewer politeness strategies when help seekers are responsible for their distress than when they are not responsible.

Seeker responsibility should also interact with the nature of the communication medium to influence support providers' evaluations and messages. The impression-intensification process identified in the hyperpersonal model (Walther, 1996) should be contingent upon a help seeker's responsibility for his or her distress (Weiner, 1980). When seekers are responsible for their distress, the negative evaluations and responses made by providers should be exaggerated as nonverbal information is restricted in CMC and further when appearance-related information is also absent in visually anonymous

CMC. When seekers are not responsible for their distress, however, the sympathetic responses of providers should be intensified in those conditions. In other words, providers in the CMC conditions who are "filling in the blanks" become more or less sympathetic relative to face-to-face depending on whether seekers are or are not responsible for their distress. Following the logic of the hyperpersonal model (Walther, 1996), intensification should increase as additional information about the seeker – in this case, appearance-related information – is restricted.

Hypothesis 5: Help seekers' responsibility for their distress and the communication medium interact to influence support providers' perceptions of seeker (a) competence and (b) character. Evaluations will be most *negative* when seekers are responsible and most *positive* when seekers are not responsible in the CMC + visual anonymity condition followed by the CMC condition and the face-to-face condition.

Hypothesis 6: Help seekers' responsibility for their distress and the communication medium interact to influence the (a) person-centeredness and (b) politeness of providers' support messages. Providers will produce the *lowest* quality support messages when seekers are responsible and the *highest* quality support messages when seekers are not responsible in the CMC + visual anonymity condition followed by the CMC condition and the face-to-face condition.

Method

Participants

Participants were recruited from undergraduate courses at a university in the United States. A total of 184 participants completed the experiment. Twelve participants were excluded because they reported knowing the confederate, had completed the study previously, indicated being suspicious about the experiment, or related reasons. The final sample of 172 participants was split almost evenly between males (51%, $n = 86$) and females (49%, $n = 83$). On average, participants were 20 years old ($M = 20.18$, SD = 2.51) and predominantly White (79%, $n = 135$).

Design

A 3 (communication medium: face-to-face/CMC/CMC + visual anonymity) × 2 (responsibility for distress: high responsibility/low responsibility) design was used. Following previous research on supportive communication (e.g., Jones & Burleson, 1997; MacGeorge, 2001), the topic of the problem experienced by the confederate was a third factor that was manipulated. This factor was not theoretically meaningful and was only manipulated to ensure that the results were not an artifact of a particular discussion topic. The problem discussed by the confederate involved an issue with academics or an internship.

Procedure

Participants arrived at the lab in pairs and waited outside with up to two confederates posing as fellow students. Participants were randomly assigned to one of the experimental conditions prior to being admitted to the lab. Once admitted, participants and confederates completed IRB paperwork and were informed that the experiment examined how

people talk about personal events. Participants were told they would serve as the confidant and listen to their partner (i.e., a confederate) discuss a problem either face-to-face or via instant messaging. Participants and confederates then completed a preliminary questionnaire. After the questionnaire, participant–confederate pairs engaged in a discussion about the confederate's issue. Participants then completed a posttest questionnaire containing measures of the dependent variables and were debriefed. All conversations between participants and confederates were recorded. Participants' consent was secured to record and use their conversations. The experiment took approximately 45 min for participants to complete.

The communication medium variable was manipulated as follows: in the CMC and face-to-face conditions, participants were able to see their confederate partner *prior to their discussion.* The confederates waited outside the lab with the participants before the study began, participant–confederate pairs were seated perpendicular to one another at a table when the study was described, and the lab attendant clearly indicated who participants would be talking to during the study. Participant–confederate pairs in the face-to-face condition were escorted to a separate interview room where the discussion took place. Participant–confederate pairs in the CMC condition were taken to separate computer stations that were divided by a large partition. During the discussion and when completing the posttest questionnaire, participants in the CMC condition were *not* able to see the confederate. In the CMC + visual anonymity condition, participants were *not* able to see the confederate serving as their partner *at any point prior to or during the study*. Participants in the CMC + visual anonymity condition were informed that their partner had arrived early to the lab and had already completed the paperwork. The confederates did not sit with participants prior to the study, nor when participants completed the IRB paperwork or preliminary questionnaire. The confederate waited at a separate computer station in the lab shielded by a partition. Participants in both CMC conditions used instant messaging to communicate.

Responsibility for distress was manipulated in the problem discussed by confederates. As in other research examining the intensification effect from the hyperpersonal model (Jiang et al., 2013) or supportive communication processes (Jones & Burleson, 1997; MacGeorge, 2001), it was necessary to hold constant the help-seeking messages in order to isolate the effects of the communication medium and responsibility for distress. The confederates delivered a memorized script describing a problem they faced involving academics or an internship, which can be found in the online supplementary file posted on the journal website in conjunction with this article. In the academic script, the confederate reported missing a final exam due to food poisoning (low responsibility) or a hangover (high responsibility) and subsequently failing a course. In the internship script, the confederate missed the start of an internship due to a hospital stay for an appendicitis (low responsibility) or a hospital stay due to alcohol poisoning (high responsibility) and subsequently lost their internship. Within the academic and internship scripts, the only thing that differed was the source of the confederate's problem. The problem occurred as a direct result of the confederate's voluntary behavior (high responsibility) or something over which the confederate had very little – if any – control (low responsibility). The severity of the problem, nature of the consequences, and attempts to make amends were held constant. The two problem scenarios were found to be believable in a pilot test and have been used to manipulate responsibility for distress in

previous research (Rains et al., in press). The academic and internship scripts totaled 210 and 178 words, respectively.

Several steps were taken to create consistency in the participant–confederate interactions across conditions. All three confederates for the study were male. Participants were given sample questions, which have been reported in the supplementary online file, to help facilitate the discussion. These questions created a structure for the interaction and allowed confederates to deliver their script in a conversational manner. The script memorized by confederates was designed with three sets of responses corresponding to the questions given to participants. If participants diverted from the suggested questions, confederates were trained to steer the conversation back on track. At the conclusion of the script, the confederates explicitly asked participants for their feedback. After participants responded to the confederate's request for assistance, the confederate then indicated that their problem had been discussed and they should conclude the conversation. No time limit was placed on the interactions.

Measures

Help seeker evaluations

Participants evaluated the confederate help seeker's character and competence in the initial and posttest questionnaires using four-item measures adapted from McCroskey, Holdridge, and Toomb's (1974) source evaluation scale. Participants reported the degree to which they perceived the help seeker to be unselfish/selfish, kind/cruel, mature/immature, and responsible/irresponsible on a seven-point scale. Each of these items was reversed scored and the mean was computed to form the measure of help seeker *character* ($M_{\text{postest}} = 5.01$, SD = 1.16, $\alpha = .78$). Participants also rated the degree to which they perceived the help seeker to be expert/inexpert, intelligent/unintelligent, incompetent/competent, and smart/dumb on a seven-point scale. These items, with the exception of incompetent/competent, were reverse scored and the mean was computed to form the measure of help seeker *competence* ($M_{\text{postest}} = 5.01$, SD = 1.01, $\alpha = .89$). Larger scores on these two measures indicate that the confederate help seeker was perceived by participants to have more character or competence. A confirmatory factor analysis showed that the posttest character and competence measures fit the sample data (Hu & Bentler, 1999), $\chi^2(19) = 57.65$, $p < .001$, CFI = .97, SRMR= .05.

Support message quality

The messages produced by participants during their interaction with confederates were coded for person-centeredness and politeness by subsets of the authors. Transcripts were created for the audio recordings of the face-to-face interactions, and all messages were anonymized so that the experimental condition was concealed.

Coding person-centeredness in support messages involved identifying the specific level of person-centeredness represented in a participant's response to the confederate help seeker during their conversation. The coding scheme adopted in this study has been used in previous research (Feng et al., 2016; Li & Feng, 2015) and reflects best practices for evaluating person-centeredness (Samter & MacGeorge, 2016). The coding scheme consists of nine hierarchical levels ranging from the lowest levels of

person-centeredness involving criticizing or challenging the targets' feelings or character (level 1) or asking the target to ignore his or her feelings (level 3) to the highest levels involving explicitly validating the target's feelings (level 7) or acknowledging the target's feelings, explaining those feelings, and reappraising the situation (level 9). The scale midpoint reflects moderate person-centeredness (level 5) involving the expression of sympathy or understanding without legitimizing or explaining the target's feelings.

Because the script involved giving participants the opportunity to respond to three distinct messages from the confederate, the unit of analysis consisted of the three corresponding responses made by each participant. Each response was coded separately and the mean was computed and used as the measure of verbal *person-centeredness* ($M = 5.98$, SD = 0.79). Larger scores indicate that participants' responses to the confederate contained higher levels of person-centeredness. Intercoder agreement was measured using Krippendorff's alpha and was acceptable ($\alpha = .86$).

A separate pair of coders evaluated the *politeness strategies* used by participants in their verbal responses to confederates. The coding scheme developed by Feng et al. (2016), which was drawn from Brown and Levinson's (1987) typology of politeness strategies, was used in this project. Their coding scheme includes 11 types of positive politeness strategies (e.g., used informal address, showed interest, used in-group identity markers, used optimistic language about the future, acknowledged positive attributes, softened negative attributions, gave reasons for recommendations) and 6 types of negative politeness strategies (e.g., used formal address, hedged prior to a recommendation, minimized the imposition of recommendations, impersonalized the situation). This coding scheme has been used in studies examining support message quality in CMC (e.g., Feng et al., 2016; Li & Feng, 2015). Following previous research (Feng et al., 2016), the total number of positive and negative politeness strategies in participants' responses to confederates were summed ($M = 7.09$, SD = 2.47). Larger scores indicate that participants' responses to the confederate used a greater number of politeness strategies. Intercoder agreement was acceptable (Krippendorff's $\alpha = .77$).

Manipulation checks and control variables

The responsibility for distress manipulation was evaluated with five items used in previous research to assess perceptions that a help seeker was at fault for his or her problem (MacGeorge, 2001). Participants reported their belief that the help seeker: is the source of the problem, is responsible for causing the problem, has only him/herself to blame for the problem, is at fault for the problem, and is an innocent victim (reverse scored). Ratings were made on a seven-point scale with larger values indicating greater perceived responsibility. The mean of the five items was computed and used as the measure of *perceived responsibility* ($M = 4.13$, SD = 1.76, $\alpha = .94$). Two items were developed for this study to evaluate the visual anonymity manipulation. Participants rated their agreement with statements indicating that they saw what their partner looked like prior to the conversation and that they were able to see their partner's face before the conversation. Ratings were made on a seven-point scale with larger values indicating less visual anonymity. The mean of the two items was used as the measure of *visual anonymity* ($M = 4.67$, SD = 2.58, $\alpha = .98$).

Three control variables were also evaluated. *Participant sex* was included in the analyses as a control variable given previous research showing sex differences in the production and evaluation of support messages (Burleson et al., 2005; High & Solomon, 2014; Jones & Burleson, 1997; MacGeorge et al., 2002). As previously noted, the nature of the problem discussed by the confederate was manipulated to ensure that the results were not unique to any particular set of circumstances faced by the support seeker. *Problem topic* was included as a control variable to hold constant any variance stemming from this factor. Finally, the number of *words used by participants* ($M = 244.31$, SD = 196.79) was included as a control variable in order to account for any differences in the volume of interaction across the experimental conditions. This covariate makes it possible to demonstrate that participants' responses were not an artifact of the amount of discussion they had with the confederate.

Results

Preliminary analyses

Several preliminary analyses were conducted to demonstrate the efficacy of the experimental procedures. An ANCOVA was conducted to evaluate the responsibility for distress manipulation with problem topic, participant sex, and frequency of words used by participants serving as control variables. As expected, participants perceived the confederate help seeker in the high responsibility condition ($M = 5.55$, SE = .12) to be significantly more responsible for his problem than in the low responsibility condition ($M = 2.79$, SE = .11), $F(1, 161) = 287.03$, $p < .001$, $\eta^2 = .61$. A second ANCOVA was conducted to evaluate the visual anonymity manipulation. The omnibus test of the difference in perceived visual anonymity across the three communication medium conditions was significant, $F(2, 161) = 547.35$, $p < .001$, $\eta^2 = .85$. Post-hoc pairwise comparisons showed that participants in the CMC + visual anonymity condition perceived the most visual anonymity ($M = 1.18$, SE = .13) and there was no difference between the CMC ($M = 6.38$, SE = .13) and face-to-face ($M = 6.48$, SE = .13) conditions.

A second set of analyses were conducted to evaluate the three confederates. Prior to discussing the confederate's problem, participants completed a preliminary questionnaire that included measures of the confederate's competence and character. There were no significant differences in participants' perceptions of the three confederates' competence or character prior to the interaction. Additionally, there were no significant differences in the four dependent measures across the three confederates. These findings offer evidence that the performances of the three confederates were consistent.

Effects of the communication medium

Hypothesis 1 predicted that participants' evaluations of help seeker (a) competence and (b) character would be the most negative in the CMC + visual anonymity condition with evaluations in the CMC condition less negative and the face-to-face condition least negative. Given the specific order in which the results were expected across conditions, contrast analysis was used to test Hypothesis 1. Contrast analysis makes it possible to evaluate whether a series of observed means follow a predetermined pattern (Rosenthal & Rosnow, 1985). The contrast weights, which can be found in Table 1, reflected the idea

Table 1. Means (and standard errors) for main effects.

	Medium					
	CMC + visual anonymity (−2)		CMC (−1)		Face-to-face (3)	
	M	SE	*M*	SE	*M*	SE
Competence	4.67	.14	5.16	.14	5.21	.14
Character	4.69	.15	5.08	.15	5.22	.15
Person-centeredness	6.11	.11	6.04	.10	5.78	.11
Politeness	8.01	.31	7.73	.30	5.46	.31

	Responsibility for distress			
	High responsibility		Low responsibility	
	M	SE	*M*	SE
Competence	4.81	.11	5.22	.11
Character	4.53	.12	5.47	.12
Person-centeredness	5.91	.09	6.04	.08
Politeness	6.93	.25	7.20	.24

Notes: Means and standard errors are adjusted, controlling for the discussion topic, participant sex, and words spoken by participants. Contrast weights appear in parentheses. Possible range for person-centeredness (1–9); possible range for politeness (0–17).

that responses in the CMC + visual anonymity condition (−2) should be the most negative followed by the CMC condition (−1) and the face-to-face condition (+3). Controlling for problem topic, participant sex, and frequency of words used by participants, the contrast models were consistent with the hypothesized pattern for competence, $F(1, 154) = 4.49$, $p = .036$, $\eta^2 = .03$, and character, $F(1, 154) = 4.45$, $p = .037$, $\eta^2 = .02$. The observed means reported in Table 1 followed a trend in which scores for competence and character were lowest in the CMC + visual anonymity condition, less negative in the CMC condition, and least negative in the face-to-face condition. Hypotheses 1a and 1b were supported.

Hypothesis 2 predicted that participants would produce support messages containing (a) lower levels of verbal person-centeredness and (b) fewer politeness strategies in the CMC + visual anonymity condition followed by the CMC and face-to-face conditions. Contrast analysis was again used to test this ordered prediction with the weights reported in Table 1. Although the contrast models with the three control variables included were significant for person-centeredness, $F(1, 162) = 5.24$, $p = .023$, $\eta^2 = .03$, and politeness, $F(1, 160) = 37.82$, $p < .001$, $\eta^2 = .18$, the results were in the opposite direction of what was predicted. The observed means illustrated in Table 1 followed a pattern in which participants produced messages containing the highest level of person-centeredness and most politeness strategies in the CMC + visual anonymity condition and the lowest levels of person-centeredness and politeness in the face-to-face condition. Hypotheses 2a and 2b were not supported.

Effects of responsibility for distress

Hypothesis 3 predicted that participants' perceptions of help seeker (a) competence and (b) character would be more negative when seekers were responsible for their distress than when they were not responsible. ANCOVAs controlling for problem topic, participant sex, and the frequency of words used by participants showed that the confederate in the high responsibility condition was perceived to have lower levels of competence,

$F(1, 154) = 6.91$, $p = .009$, $\eta^2 = .04$, and character, $F(1, 154) = 31.73$, $p < .001$, $\eta^2 = .16$, than the confederate in the low responsibility condition. The mean scores can be found in Table 1. Hypotheses 3a and 3b were supported.

Hypothesis 4 predicted that participants would produce support messages containing (a) lower levels of person-centeredness and (b) fewer politeness strategies when support seekers were responsible for their distress than when they were not responsible. ANCOVAs controlling for problem topic, participant sex, and frequency of words used by participants indicated that there were no statistically significant differences in the person-centeredness, $F(1, 162) = 1.20$, $p = .275$, $\eta^2 = .007$, or politeness $F(1, 160) = 0.62$, $p = .432$, $\eta^2 = .003$, of the support messages produced by participants in the high and low responsibility conditions. Mean scores can be found in Table 1. Hypotheses 4a and 4b were not supported.

Interaction effects

Hypothesis 5 predicted that help seekers' responsibility for their distress and the communication medium would interact to influence support providers' perceptions of seeker (a) competence and (b) character. Evaluations were predicted to be most *negative* when seekers were responsible for their distress and most *positive* when they were not responsible in the CMC + visual anonymity condition followed by the CMC condition and the face-to-face condition. Hypothesis 6 predicted the same trend for (a) verbal person-centeredness and (b) politeness. The contrast weights presented in Table 2 illustrated these predictions.

The observed means reported in Table 2 were largely inconsistent with the predictions made in Hypotheses 5 and 6. Instead, the pattern of observed means followed the main effects for the communication medium in the low responsibility condition, but not when responsibility was high. Accordingly, the contrast models were not tested. Hypotheses 5 and 6 were not supported. These results will be further considered in the discussion section.

Post-hoc analyses

A series of post-hoc analyses were conducted to better understand the unexpected findings involving the main effects of the communication medium and responsibility for distress. Prior research on supportive communication has shown that the interaction goals of support providers can offer valuable insights about their motivations in offering aid (Burleson et al., 2005; MacGeorge, 2001). Two goals particularly relevant to this project were evaluated using measures developed by MacGeorge (2001): the desire to assist help seekers recognize their own responsibility for their problem ($M = 3.03$, SD = 1.40, $\alpha = .77$) and the motivation to encourage help seekers to gain a more positive perspective of their problem ($M = 4.42$, SD = 1.16, $\alpha = .89$). In reflecting what participants intended to accomplish by providing support, these two goals can help explain the unexpected findings from the hypothesis tests.

A contrast model testing the main effect of the communication medium using the weights reported in Table 1 and three control variables (i.e., problem topic, participant sex, and participants' word use frequency) showed a statistically significant trend in

Table 2. Means (and standard errors) for the medium × responsibility interaction.

	Medium × responsibility for distress											
	CMC + visual anonymity/ high respon-sibility (−3)		CMC/high respon-sibility (−2)		Face-to-face/high respon-sibility (−1)		CMC + visual anonymity/ low respon-sibility (+3)		CMC/low respon-sibility (+2)		Face-to-face/low respon-sibility (+1)	
	M	SE	*M*	SE	*M*	SE	*M*	SE	*M*	SE	*M*	SE
Competence	4.52	.20	4.97	.19	4.93	.19	4.81	.18	5.35	.20	5.48	.20
Character	4.18	.22	4.69	.20	4.71	.21	5.20	.19	5.48	.21	5.74	.21
Person-centeredness	5.97	.16	6.00	.14	5.76	.14	6.24	.14	6.08	.14	5.80	.15
Politeness	7.55	.46	7.89	.42	5.35	.43	8.46	.39	7.58	.41	5.57	.44

Notes: Means and standard errors are adjusted, controlling for the discussion topic, participant sex, and words spoken by participants. Contrast weights appear in parentheses. Possible range for person-centeredness (1–9); possible range for politeness (0–17).

which participants were increasingly motivated to help confederates gain a more positive perspective about their problem in the CMC conditions, $F(1, 163) = 9.75$, $p = .002$, $\eta^2 = .05$. Participants were least motivated to help the confederate gain a more positive perspective in the face-to-face condition ($M = 4.05$, SE = .15) followed by the CMC condition ($M = 4.55$, SE = .15) and most motivated to help the confederate gain a more positive perspective in the CMC + visual anonymity condition ($M = 4.72$, SE = .15). These results indicated that a greater reduction in social cues associated with the communication medium left participants more motivated to assist the confederate help seeker to see his problem in a more positive light. The communication medium, however, did not influence the second goal. The contrast model examining participants' goal of helping the confederate recognize his responsibility was not statistically significant ($M_{face\text{-}to\text{-}face} = 3.20$, SE = .17; $M_{cmc} = 2.95$, SE = .16; $M_{CMC\ +\ VA} = 2.97$, SE = .16), $F(1, 163) = 1.24$, $p = .27$, $\eta^2 = .005$.

ANCOVAs testing the main effect of responsibility for distress showed that participants were significantly more likely to have the goal of helping the confederate recognize his own culpability for his problem in the high responsibility condition ($M = 3.68$, SE = .13) than the low responsibility condition ($M = 2.40$, SE = .13), $F(1, 163) = 48.89$, $p < .001$, $\eta^2 = .21$. It is noteworthy, however, that the mean scores in both conditions were below the scale midpoint. Participants were generally not motivated to hold accountable the confederate and significantly less so in the low responsibility condition compared to the high responsibility condition. Responsibility for distress did not influence the second goal. Although not statistically significant, $F(1, 163) = 1.16$, $p = .28$, $\eta^2 = .006$, the observed mean score in the high responsibility condition ($M = 4.53$, SE = .12) for the goal of helping the confederate gain a more positive perspective was larger than in the low responsibility condition ($M = 4.35$, SE = .12). The implications of the post-hoc analyses will be further addressed in the discussion section.

Discussion

The goal of this study was to investigate the implications of CMC for support message production. One primary objective was to examine the potential for hyperpersonal effects in

support provision. Following the hyperpersonal communication model (Walther, 1996), support providers were expected to have more exaggerated perceptions of and responses to help seekers as the amount of information about seekers was reduced in CMC. Because soliciting aid involves revealing one's problems or deficiencies (Feng & Burleson, 2006; Fisher et al., 1982; Goldsmith & Parks, 1990; Lim et al., 2013), support providers were expected to have more negative perceptions and responses in the CMC condition than face-to-face and the most negative responses in the CMC + visual anonymity condition. The results were partially consistent with these expectations.

The contrast models revealed a general trend in which participants in the CMC + visual anonymity condition evaluated the character and competence of the support seeker most negatively followed by participants in the CMC condition and then the face-to-face condition. As predicted by the hyperpersonal model (Walther, 1996; Walther et al., 2015), the reduction in information in the CMC conditions led to intensified impressions of competence and character. The contrast models also showed evidence of the intensification effect for support message quality. The results, however, were in the opposite direction of what was predicted. The trends in the observed means showed that the quality of support messages increased as information about the support seeker decreased. Having more blanks about the help seeker to be filled in led participants to produce higher quality support messages.

Although the results related to the communication medium appear contradictory, they may be reconciled by considering the findings from previous research and the nature of the situation presented in the experiment. Hancock and Dunham (2001) found that impressions during initial interactions were more intense but less detailed in CMC than face-to-face. Participants in this study may have similarly developed more intense but less nuanced impressions of the confederate, who was presented as a fellow undergraduate student facing a problem for which he was seeking assistance. Whereas the confederate's ineptitude may have been salient along with several other qualities in the face-to-face condition, it could have become a defining characteristic of the confederate among participants in the CMC and CMC + visual anonymity conditions. As the number of social cues were reduced, heightened perceptions of the confederate's ineptitude may have led participants to believe that the confederate was truly helpless – a fellow undergraduate student who was incapable of solving his problem independently.

The results of the post-hoc analyses are consistent with this idea. As social cues stemming from the communication medium were reduced, participants were more motivated by the goal of helping the confederate to view his problem in a more positive light. The same conditions that led participants to evaluate the confederate's competence and character more negatively also made them more motivated to help the confederate overcome his problem. Given this greater motivation to assist the confederate in developing a more positive perspective, it follows that participants' support messages contained higher levels of person-centeredness and a greater number of politeness strategies in the CMC and CMC + visual anonymity conditions. Rather than punishing the confederate help seeker for his flaws with low-quality support as hypothesized, the post-hoc analyses suggest that the reduction in social cues may have led participants to increasingly view the confederate help seeker's ineptitude as a defining characteristic signaling that he was in desperate need of outside intervention.

The findings from this study make important contributions to research on the hyperpersonal communication model (Walther, 1996; Walther et al., 2015). Although the main effects of the communication medium on support message quality were unexpected, they nonetheless followed the intensification effect proposed in the hyperpersonal model (Walther, 1996). The trends observed in the mean scores for all of the contrast models reflected more exaggerated responses as greater amounts of information about the confederate were restricted. The possibility for hyperpersonal effects during supportive communication have been widely hypothesized by scholars (e.g., Caplan & Turner, 2007; Tanis, 2008; Wright, 2016; Wright & Bell, 2003). To our knowledge, however, the present study represents the only empirical test of this phenomenon in the context of support provision.

Beyond simply documenting the intensification effect in a novel context, the present study advances research on hyperpersonal communication by distinguishing social cues related to appearance information and information about nonverbal behavior. At the most basic level, distinguishing these two types of information makes it possible to conduct a more direct and rigorous test of the underlying mechanism responsible for the intensification effect (Walther, 1996; Walther et al., 2015). In restricting more information in the CMC + visual anonymity condition than the CMC condition, it was possible to demonstrate that greater levels of intensification occur as people "fill in the blanks" stemming from missing information about their communication partner. This study also advances prior research by offering evidence that information about a sender's appearance is distinct from nonverbal behavior information in shaping receiver responses during the interaction. This idea is implicit in many studies that consider visual anonymity, such as research testing the social identity model of deindividuation effects (for a review, see Spears & Postmes, 2015). However, relatively few efforts have been made to distinguish different types of cues reduced in CMC relative to face-to-face interaction (for an exception, see Lapidot-Lefler & Barak, 2012). This study offers one such attempt to begin unpacking the outcomes stemming from different types of information that may be restricted in CMC.

Responsibility for distress, seeker evaluation, and support message production

A secondary objective of this project was to evaluate the effects of a seeker-related factor for support provision. Following the cognitive–emotion–action model of helping behavior (Weiner, 1980) and prior support research (Burleson et al., 2005; Jones & Burleson, 1997; MacGeorge et al., 2002; Rains et al., in press), participants' perceptions and responses to the confederate help seeker were predicted to be influenced by the confederate's responsibility for distress. Consistent with expectations, participants evaluated the confederate help seeker who was responsible for his distress to have significantly lower levels of character and competence than the seeker who was not responsible. Yet, there were no differences in the person-centeredness of support messages or number of politeness strategies used when the seeker was and was not responsible.

As with the main effect of the communication medium, the nature of the study context may explain why participants' negative evaluations did not extend to the quality of support messages they produced. The confederate's status as a fellow student likely made participants willing to overlook his flaws. The post-hoc analyses involving participants' goals

during the interaction offer evidence for this idea. Despite being more motivated by the goal of informing the confederate about his role in causing his own problem in the high responsibility condition than the low responsibility condition, scores for both groups were below the scale midpoint. In other words, none of the participants were highly motivated to hold accountable the confederate support seeker. It appears that participants recognized the confederate's ineptitude but also saw a peer in need of aid and were not willing to withhold assistance.

Although the constellation of findings related to the responsibility for distress variable are unexpected, they are nonetheless informative and offer important insights for researchers studying supportive communication. Previous studies showed that a help seeker's responsibility for his or her distress can influence support providers' goals (MacGeorge, 2001), message evaluations (Jones & Burleson, 1997; MacGeorge et al., 2002), and the quality of support messages they produce (Burleson et al., 2005; Rains et al., in press). The present study, however, was the only one that examined message production in the context of a real-time conversation with a peer. It may be that support provision studies employing hypothetical scenarios are limited to offering insights about specific sets of outcomes such as support providers' perceptions or contexts like during asynchronous interaction in an online community. It is also possible that the findings from this study regarding responsibility for distress and support message production only apply in synchronous interaction between peers. At the very least, the inconsistencies in the results between this and previous endeavors underscore the need for additional research – particularly involving research designs that include and evaluate dyadic interaction.

Beyond the main effect of responsibility for distress, the observed mean scores for the interaction between seeker responsibility and the communication medium did not conform to predictions. Although the intensification effect in the hyperpersonal model (Walther, 1996) was expected to be contingent upon the help seeker's responsibility for distress, this interaction was not observed. A close inspection of the mean scores in Table 2 suggests that the main effects for the communication medium were reproduced in the low responsibility conditions. Participants evaluated the confederate help seeker more negatively, but produced higher quality support messages, as the social cues available decreased in the low responsibility condition. These trends were not evident in the high responsibility condition. It may be that hyperpersonal effects can be disrupted by exigencies in discussion content. In this case, the confederate help seeker's culpability for his distress may have undermined the tendency for participants to form intensified impressions as social cues were reduced. More broadly, the results of this study suggest that there are contexts and circumstances where hyperpersonal effects are more and less likely to occur. Future research would be valuable to further consider the types of conversational content that facilitate and inhibit the intensification effect in the hyperpersonal model.

Limitations

The results of this study should be considered in light of its limitations. Despite the safeguards put in place to exert control over the interactions (e.g., script, confederate training, etc.), the confederates used significantly more words in the face-to-face condition than in

the two CMC conditions. The impact of this difference, however, appears to have been negligible. If the amount of words used by confederates was responsible for the results from this study, then differences in the dependent measures would be expected only between the face-to-face and the two CMC conditions, and the two CMC conditions should not be different from one another. The results of the contrast models did not follow this pattern. Instead, the contrast models showed consistent trends in which the observed means in the CMC condition were distinct from the CMC + visual anonymity condition. Because there was no difference in the volume of confederate talk between these two CMC conditions, the trends observed in the results offer evidence that differences in the number of words used by confederates in the face-to-face and CMC conditions were not a major limitation.

Conclusion

In an effort to better understand online support, we examined the implications of the reduced social cues in CMC for support message production. Although some of the results were unexpected, the collection of findings offers insights that advance research on CMC and supportive communication. In addition to reporting empirical evidence that the intensification effect in the hyperpersonal model occurs as providers "fill in the blanks" stemming from social cues absent in CMC, two distinct classes of information were identified that contribute to this effect. The results related to the responsibility manipulation showed that, despite evaluating the help seeker more negatively, the messages produced by providers did not differ when the seeker was and was not responsible for his distress. Taken as a whole, the findings from this study underscore the potentially important role CMC can play in support provision. It is our hope that through continued research we can develop a more complete understanding of supportive communication processes both online and offline.

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No potential conflict of interest was reported by the authors.

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