

On the bias: Self-esteem biases across communication channels during romantic couple conflict

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ABSTRACT

Are one's individual biases stronger when mediated communication is used? This paper examines the role of self-esteem-related biases and communication channel during romantic couple conflict. Romantic couples communicated about a conflict either face-to-face (FtF) or via instant messenger (IM). Results revealed that for people with lower levels of self-esteem, their negative biases were triggered when they communicated with their partners via IM; people with lower levels of self-esteem had more negative assessments of the conflict discussion and of the impact of the discussion on the relationship when communicating via IM than when communicating FtF. At a theoretical level, this work deepens our understanding of how individual difference variables like self-esteem impact how individuals process information and communicate via technology. At a practical level, findings suggest that the use of mediated communication during conflict is more harmful to certain individuals than to others.

Author Keywords

Conflict; romantic relationships; computer-mediated communication; self-esteem

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Relational communication that was once reserved for face-to-face (FtF) encounters has spilled into the realm of technology-mediated communication [47]. Individuals now use technology to initiate, maintain, and even dissolve relationships, and close relational ties are more likely to use multiple communication channels to communicate than are weak ties [16]. Yet, scholars are just beginning to uncover how technology-mediated communication differs from FtF communication in many relational contexts.

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One context in which the use of communication technologies is becoming more prevalent is interpersonal conflict [48, 13, 37, 5]. Understanding how individuals communicate during conflict is important since conflict is inevitable in interpersonal relationships, and how partners handle conflict can greatly impact relational outcomes (see [39] for a review), as well as mental and physical well-being (see [24] for a review).

One group of people who are particularly drawn to using technology to communicate with relational partners are people with lower levels of self-esteem. Studies have demonstrated that people with lower levels of self-esteem (LSEs) prefer to use mediated rather than FtF communication in a variety of contexts, likely because the ambiguity of mediated communication can reduce face-threat (e.g. [21, 43]). Yet, it may be that the communication channels LSEs prefer are actually ill-suited to their communication and relational needs. For instance, one study found that while LSEs were drawn to Facebook as a way to connect with others through self-disclosure, their disclosures were low in positivity and high in negativity, which resulted in undesirable feedback from others [11]. In the realm of close relationships, however, an open question is: Do people with lower levels of self-esteem have more negative relational experiences when using the channels of communication that they prefer?

In romantic relationships, LSEs are biased toward negative interpretations of their partners' behavior and HSEs are biased toward positive interpretations of their partners' behavior [33, 34]. The goal of this work is to understand the relationship between self-esteem and communication channel in romantic couple conflict, a context in which self-esteem-related biases are particularly salient. The majority of previous research in this area has involved hypothetical situations, self-reports of past interactions, or controlled experiments with strangers. The current work, however, examines the roles of self-esteem and communication channel in real-time communication among romantic couples. LSEs are biased toward negative interpretations, especially in ambiguous contexts, and how individuals interpret their partners' communication and behavior is crucial to relational well-being [33]. Yet, we know little about how communication channel can influence this process for romantic couples. The current work aims to

contribute to our knowledge of how self-esteem biases are enacted by examining those biases in a mediated communication setting. By understanding the extent to which self-esteem biases differ across communication channels, we can see whether the communication channels LSEs prefer are the ones that are actually harmful to their relational well-being.

LITERATURE REVIEW

Self-Esteem in Romantic Relationships

Self-esteem represents how one feels about one's self, or one's sense of worth, and is drawn in large part from our perceptions of what others think of us. Individuals with low self-esteem (LSEs) tend to have trouble in their romantic relationships [33]. LSEs are biased toward negative interpretations of their partners' behavior and are sensitive to feelings of threat and rejection. In addition, LSEs dramatically underestimate how positively they are viewed by their partners and have lower relational well-being [33] and lower relational satisfaction [10, 33]. When faced with relationship difficulties, LSEs search for information to validate their thoughts that their partner does not care for them and distance themselves from their partners as a way to protect themselves from getting hurt [34].

In contrast to LSEs, individuals with high self-esteem (HSEs) have positive biases when it comes to their partners, and tend to interpret their partners' communication and behavior favorably. HSEs are also less sensitive to relational threats, and respond to threats by emphasizing the value of their relationship and drawing closer to their partners [34]. The fact that they feel secure about themselves likely helps HSEs to derogate relationship threats or signs of rejection in order to focus on the positive aspects of the relationship.

Yet, while LSEs pursue the goal of avoiding rejection, they also pursue the competing goal of attaining closeness with a relational partner [25]. The pursuit of these competing goals is explained by the risk regulation system [32]. Murray and colleagues explain that "the thoughts and behaviors that are critical for establishing satisfying close connections with others necessarily increase both the short-term risk of rejection and long-term pain of rejection" ([32], p.642). Since LSEs are so sensitive to rejection, their self-protection goals often take precedence over their relationship-enhancement goals.

Murray and colleagues have found that LSEs "read too much into problems" with their partners, interpreting the problems as signs of fading feelings or commitment [34]. Furthermore, Bellavia and Murray [31] found that LSEs over interpret their dating partners' negative moods, internalizing responsibility and hurt feelings when the cause of the mood was actually ambiguous. While LSEs may exhibit negative interpretations because they are searching for possible signs of rejection, LSEs may also be unwilling to accept positive feedback from their partners since doing

so would not be consistent with their self-concepts [27]. This line of work suggests that LSEs are biased toward negative interpretations, tend to overanalyze situations with their partners, and tend to believe the worst in ambiguous situations.

Overall, we know that LSEs are negatively biased toward their partners' communication and behavior, and that these negative biases are particularly salient in threatening contexts such as interpersonal conflict. Yet, it is possible that the use of certain communication channels may actually heighten these biases, since the amount and type of social cues that help individuals interpret information differ across channels.

Self-Esteem, Relationships, and Technology-mediated Communication

When it comes to the domain of romantic couple conflict, previous research has suggested that there are drawbacks of using technology-mediated communication. For instance, Burge and Tatar found that couples discussing a conflict via mediated communication (phone and IM) may experience significantly lower mood states than couples who communicated FtF [5]. Another study found that when individuals choose email over FtF to discuss a conflict, they perceive their partners and themselves as more avoidant [29]. In addition, Coyne and colleagues found that using text messaging to discuss serious issues or broach a potentially confrontational topic with one's partner was associated with increased levels of negative communication in the relationship overall [8].

Using computer-mediated communication (CMC) is typically thought of as a convenient way to avoid or ignore one's communication partner in face-threatening situations like conflict (e.g., [28, 36]). This is likely because affordances typical of channels like text messaging and IM (e.g., reduced visibility, increased editability, reduced amounts of nonverbal cues) create an environment that can be more ambiguous than FtF communication. For instance, if while texting one's partner becomes unresponsive for several minutes, it would be hard to know whether one is being ignored or whether the partner is attending to something important that suddenly came up. Or, if one sees their partner is taking a long time to compose his/her message, it would be hard to know whether the partner is hesitant about responding or just taking great care to craft a thoughtful response. This ambiguity can lead people to draw on the available cues to form impressions [49], which can result in exaggerated assessments of one's communication partner [38]. Walther describes this as the "hyperpersonal model" of communication, which mainly focuses on how individuals idealize or form positively-biased impressions of their communication partners. However, it is possible that in ambiguous contexts, negatively biased impressions may form if people are inclined to view their partners negatively.

Despite the previously described drawbacks of using CMC during a conflict, there is also evidence that the use of technology-mediated communication may actually be helpful for individuals with insecurities. In a study of individuals in dating relationships, increased frequency of text messaging was associated with more positive relationships for highly avoidant participants (those who have a dismissive, independent attachment to relational partners) but not for less avoidant participants [30]. This finding suggests that text messaging affords avoidant individuals a unique opportunity to connect with their partners. In addition, greater use of social network sites was associated with increased levels of intimacy and support in relationships for anxiously attached participants (those who have a worried, dependent attachment to relational partners) but not for securely attached participants. Furthermore, [42] found that individuals in romantic relationships seek out mediated channels to better manage their emotions or to find a less face-threatening way to offer a heartfelt apology after a conflict. These findings suggest that the use of text-based communication may lead to positive relational outcomes for people who feel insecure in their relationships. This work, however, did not focus specifically on the role self-esteem plays in mediated communication.

In this study, we examine the extent to which self-esteem biases manifest in mediated communication compared to FtF communication. To do this, we brought romantic couples to a lab, asked them to discuss a conflict either FtF or via mediated communication, and then asked them to provide assessments of the discussion.

HYPOTHESES

After couples discuss a conflict, how do self-esteem and communication channel influence their assessments of that discussion? We predict that self-esteem-related biases will be stronger during mediated, text-based conversations than during FtF conversations, since the increased ambiguity of text-based communication may make it easier to perceive what one is already inclined to perceive. More specifically, we predict that during mediated conversations, LSEs' negative biases will be heightened and, as a result, LSEs will have more negative experiences with the interaction than LSEs who have FtF conversations. In addition, we predict that during mediated conversations, HSEs' positive biases will be heightened and, as a result, HSEs will have more positive experiences with the interaction than HSEs who have FtF conversations.

Overall Satisfaction with the Interaction

Based on prior literature about the role of self-esteem in relationships, we predict:

H1a: LSEs will report lower ratings of satisfaction with the interaction than will HSEs.

Based on prior literature, which suggests that the use of mediated communication during conflict has negative outcomes, we predict:

H1b: Individuals communicating via mediated communication will report lower ratings of satisfaction with the interaction than will individuals communicating FtF.

And due to the biasing effects described earlier, we predict:

H1c: LSEs will report lower ratings of satisfaction with the interaction when communicating with their partners via mediated communication than when communicating FtF, while HSEs will report higher ratings of satisfaction with the interaction when communicating with their partners via mediated communication than when communicating FtF.

Perceived Change in Relational Quality

In addition, individuals' self-esteem-related biases may also influence how they feel a particular conflict episode impacts the state of their relationship, since LSEs often devalue or seek to limit dependence on their relationships in order to avoid further rejection (e.g., [32]). Previous research has demonstrated that, in self-reports of past relational conflicts, the use of mediated communication was associated with reports of the conflict having more negative impact on relational quality [43]. This same work did not find a relationship between self-esteem and assessments of a conflict's impact on relational quality. It is possible, however, that self-esteem biases are more easily detected in the moment than via self-reports of a past event. Therefore, we predict:

H2a: Lower levels of self-esteem will be associated with more negative perceived change in relational quality.

H2b: Conflicts in mediated communication will be associated with more negative perceived change in relational quality than will FtF conflicts.

H2c: Lower levels of self-esteem will be associated with more negative perceived change in relational quality for conflicts in mediated communication than for FtF conflicts, while higher levels of self-esteem will be associated with more positive perceived change in relational quality for conflicts in mediated vs. FtF communication.

METHOD

The study design draws on a number of instrumentations from various studies of couple communication, including studies of couple conflict (e.g., [1, 7, 14, 22, 44]). In these studies, partners typically interact in some way (e.g., discuss a conflict topic) and provide feedback about the experience. There is also a long history of studies that examine aspects of interpersonal communication and impression formation across different channels (e.g., [3, 4, 17]). In addition, Burge and Tatar [5] applied a version of the couple conflict paradigm across three communication channels (FtF, phone, and IM). The methodology employed

in this study draws on Burge and Tatar's design (assigning couples to discuss an argument in a particular communication channel and then having couples report individually on their experiences), on Afifi and colleagues' [1] prompt for collecting potential conflict discussion topics, and on various aspects of existing laboratory-based work that examines interpersonal communication across communication channels.

Participants

Participants ($N = 176$) were 88 romantic couples who were either students or staff at a Midwestern U.S. university or members of the surrounding community. Participants' ages ranged from 18 to 56 ($M = 23.48$, $SD = 4.85$). Each participant received \$25 for participating and the study lasted about an hour.

Eighty-four couples were heterosexual and four couples were same-sex couples (two were male-male couples and two were female-female couples). Half of participants were female and half were male. The majority of participants were Caucasian (58%), with 18% Asian/Pacific Islander, 9% Hispanic/Latino, 8% African-American, and 7% Mixed Race/Other (one participant did not report his/her race). Relationship length ranged from 1 month to 12 years, with an average of 23.7 months. The majority of couples reported that they were "seriously dating" (72%), with 6% "dating casually," 7% "engaged," 9% "married," and 6% "life partners." Thirty-three percent of couples reported that they lived together while 67% of couples reported that they did not live together. Nine percent of couples described themselves as being in a long-distance relationship, while 91% of couples described themselves as being in a non-long-distance relationship.

Procedure

To investigate the extent to which self-esteem biases were present across different communication channels, couples were randomly assigned to one of two conditions: Instant Messenger (IM) or Face-to-Face (FtF) communication. Upon arriving at the lab, couples in both conditions were consented together, and then they were put into two separate rooms to fill out a series of questionnaire items.

First, participants filled out a series of questionnaire items about themselves (including a measure of self-esteem) and about their relationship (including their relationship status). Participants were then provided with a short definition of 'conflict': "A conflict is an instance where you and your partner are at odds with each other," and each partner was prompted to provide a list of four topics that tend to be conflict inducing in their relationship (see [1] p.110 for procedure details). Participants were told not to list any topics they were uncomfortable discussing, that their partner was also being asked to make a list, that their partner would never see the participant's list, and that the researcher would compare their list with their partner's in order to pick a topic to discuss.

The researcher then compared the lists and searched for a mutually listed topic. If multiple topics listed were mutual, the researcher chose the first topic that was suggested in both lists. If partners listed more than one mutual topic but in different orders, one partner was randomly selected and the topic that was higher on that partner's list was selected. If participants submitted lists that did not have any overlapping issues, one partner was randomly selected and the first issue on that partner's list was discussed. All participants wrote at least one topic.

After the topic was chosen, the researcher separately informed each participant that they would be discussing this topic with their partner in the next stage of the study. If the partners mutually listed the topic, both wordings were presented to the partners verbatim. Partners were told the topic in their words first and in their partner's words second. If the partners did not list a mutual topic, the researcher explained that this was the case and the researcher randomly selected one of them and picked the first item from that list.

At this point, the study diverged depending on the condition to which couples were assigned. Accordingly, the FtF and IM conditions are discussed separately below.

Face-to-Face Condition

For participants in the FtF condition, partners were brought together in one room to discuss their topic. The researcher then told participants that they would have eight minutes¹ to discuss the topic and that they would receive a one-minute warning before time was up. They were told that they did not have to use all of the allotted time and that either partner could alert the researcher when they were done, if they finished early. Then, the researcher started a video recording and explained that once she left the room, the participants could start talking. When the participants were done talking, the researcher came back into the room, stopped the recording, and escorted the partners to their separate rooms. Then the researcher copied the video file to each of the partner's local computers and returned to the participants' rooms and told them that, for the next step, they were going to review a video of the interaction they just had with their partners. Participants then reviewed the interaction and answered some questions about specific things their partners said during the interaction. Lastly, participants answered questions about their overall satisfaction with the interaction and their perceived change in relational quality resulting from the conflict discussion. Finally, to restore their relationship to a more positive state, participants were instructed to list three things that they like about their relationship. Then they were debriefed.

¹ This length of time is similar to other studies where couples discuss a conflict (e.g., [2]).

² Participants in the FtF condition had 8 minutes to talk while participants in the mediated condition had 16 minutes to talk since individuals tend to produce words at a lower rate when typing than

IM Condition

Participants in the IM condition remained in their separate rooms after they were told which topics they would be discussing. The researcher then opened up an Instant Messaging client on each of the participants' computers. Partner A's screen name was "Participant A" and Partner B's screen name was "Participant B." (Participants also had a sticky note on the bottom of their monitors to remind them of which letter they were assigned to). The researcher separately explained to participants that they would have 16 minutes² to discuss the topic with their partners, and that they would receive a two-minute warning when time was almost finished. As in the FtF condition, participants were told that they did not have to use all of the allotted time and that either partner could alert the researcher when they were done, if they finished early.

Once the time was up or once participants were finished, participants reviewed a PDF transcript of the conversation they just had with their partners and answered some questions about specific things their partners said during the interaction. As in the FtF condition, participants in the IM condition also answered questions about their overall satisfaction with the interaction and their perceived change in relational quality resulting from the conflict discussion. They also completed the relationship-restoring task and were debriefed.

Full IRB approval was obtained for this study from the authors' institution and all data was anonymized.

MEASURES

Items were measured on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) unless otherwise indicated.

Independent Variables

Communication Channel

Half of the couples in the study communicated via instant messenger and half communicated face-to-face.

Self-Esteem

Participants completed the 10-item Rosenberg self-esteem scale [40], which included items like "On the whole, I am satisfied with myself," and "I take a positive attitude toward myself" ($M = 5.47$, $SD = .95$, $\alpha = .89$).

Partner-Specific Attachment Anxiety

In addition to self-esteem, attachment anxiety is a construct that reflects the feelings of insecurity in romantic relationships. Anxiously attached (vs. securely attached) individuals are insecure about their relationship partners, and search for information to corroborate these insecurities

[12]. The trait of self-esteem has been found to have similar effects in romantic relationships as the trait of attachment anxiety [6]. In other words, individuals with low self-esteem (LSEs) act in similar ways to anxiously attached individuals, and individuals with high self-esteem (HSEs) act in similar ways to securely attached individuals. In addition, securely attached individuals tend to have higher levels of self-esteem than do individuals with less secure attachment styles (see [26] for a brief review). Yet, attachment anxiety and self-esteem, while related, are typically treated as independent constructs (e.g., [15]).

Partner-specific attachment anxiety was measured using a modified portion of the Experiences in Close Relationships Scale (ECR)-Short Form [53] which contained a six-item measure of attachment anxiety ($M = 3.12$, $SD = .99$, $\alpha = .68$). (Example item: "I need a lot of reassurance that I am loved by my partner.")

Relationship Satisfaction

Participants completed a 10-item relationship satisfaction scale [41], which included items like "My partner fulfills my needs for intimacy," and "I feel satisfied with our relationship" ($M = 6.23$, $SD = .69$, $\alpha = .90$).

Dependent Variables

Overall Satisfaction with the Interaction

Participants filled out a one-item measure from the Iowa Communication Record [9]: "Please indicate the extent to which you came away satisfied with the interaction" (1 = *not at all satisfied*, 7 = *very satisfied*), ($M = 5.38$, $SD = 1.45$).

Perceived Change in Relational Quality

Participants completed a 3-item scale measuring the extent to which the conflict discussion changed or impacted the quality of the relationship [20]: "After your discussion today, did your relationship become ...?" "*more distant* (1) or *closer* (7)", "*weaker* (1) or *stronger* (7)", "*more sad* (1) or *happier* (7)" ($M = 5.36$, $SD = 1.13$, $\alpha = .95$).

ANALYSIS

Given that participants are part of a couple, it is possible that participants' answers to questions about overall satisfaction with the interaction and perceived change in relationship may not be wholly independent of their partners' answers. To determine whether a significant proportion of the variance in the dependent variables are accounted for by the couple, which we refer to as the dyad, a series of intraclass correlations were conducted using the double entry method [23]. There was a positive, significant intraclass correlation between one's overall satisfaction with the interaction and one's partner's overall satisfaction ($r = .33$, $p < .01$). The intraclass correlation between one's ratings of the conflict's impact on relational quality and one's partner's ratings of the conflict's impact on relational quality was .23 ($p < .01$). The size of these correlations

² Participants in the FtF condition had 8 minutes to talk while participants in the mediated condition had 16 minutes to talk since individuals tend to produce words at a lower rate when typing than when speaking (see [19], [18] for examples).

suggests that, in the cases where correlations were significant, there is a lack of independence between the measures taken within a dyad.

To control for the effect of the dyad and for the role of variables that are known to be correlated with self-esteem (partner-specific attachment anxiety, relationship satisfaction), two mixed effects hierarchical regression models were conducted to examine the role of self-esteem, communication channel (condition), and the interaction effect between self-esteem and channel (independent variables) on overall satisfaction with the interaction, and perceived change in relational quality. In these models, the individual, nested in the pair, was included as a random effect. Relationship satisfaction and partner-specific attachment anxiety were included as control variables.

RESULTS

Overall Satisfaction with the Interaction

Participants rated the extent to which they were satisfied with the interaction (the conflict discussion they had with their partners). Results (presented in Table 1) revealed a main effect of self-esteem at the trend level (H1a supported), such that higher levels of self-esteem were associated with higher ratings of satisfaction with the interaction. Results also revealed a significant interaction effect (at the trend level) of self-esteem \times channel such that higher levels of self-esteem were associated with higher ratings of overall satisfaction with the interaction (i.e., the conversation) in IM than they were in FtF (H1c supported). Or, put another way, lower levels of self-esteem were associated with lower ratings of overall satisfaction with the interaction in IM than they were in FtF. Examination of the slope of the two lines (see Figure 1), reveals that while ratings of overall satisfaction with the interaction vary by levels of self-esteem for participants in the IM condition ($B = .43, t = 2.72, p < .01$), self-esteem does not have a significant effect on ratings of overall satisfaction with the interaction for participants in the FtF condition ($B = .01, t = .07, p = .95$). This suggests that self-esteem biases were not present in the FtF condition, but were present in the IM condition.

There was no main effect of channel (H1b not supported). As for the control variables, higher levels of relationship satisfaction were associated with higher ratings of overall satisfaction with the interaction, but partner-specific attachment anxiety was not a significant predictor of satisfaction with the interaction.

Perceived Change in Relational Quality

In terms of participants' reports of perceived change in relational quality after the conflict discussion, there was no main effect of self-esteem (H2a not supported) or channel (H2b not supported) (See Table 2). However, there was an interaction effect such that for LSEs, perceptions of change in relational quality were more negative for those who

Variable	B	SE	p
Intercept	.34	1.40	.81
Relationship Satisfaction	.57	.16	.00**
Partner-specific Attachment Anxiety	.09	.12	.43
Self-Esteem	.22	.12	.06 [^]
Channel [FtF]	-.04	.11	.69
Self-esteem \times Channel [FtF]	-.21	.11	.06 [^]
			$R^2 = .12$

** $p < .01$, * $p < .05$, [^] $p < .10$

Effect of Dyad: Variance = 1.94, SE = .21, Upper CI = 1.56, Lower CI = 2.38

Table 1. Model predicting ratings of overall satisfaction with the interaction.

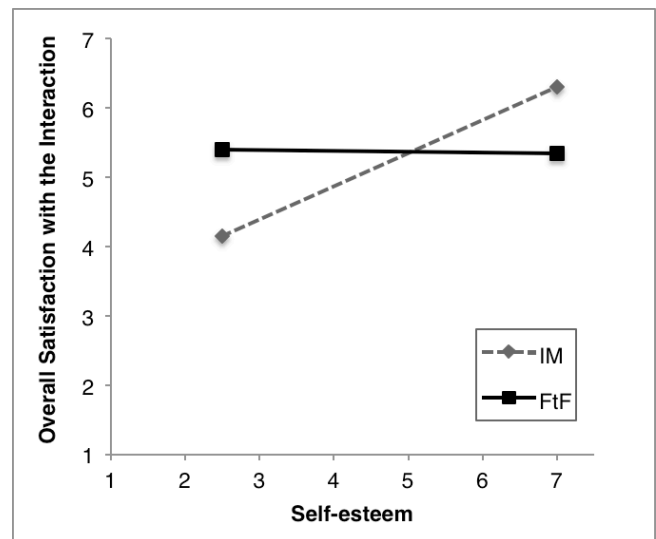


Figure 1. Self-esteem \times channel (FtF vs. IM) predicting ratings of overall satisfaction with the interaction.

communicated via IM than they were for those who communicated FtF, and for HSEs, perceptions of change in relational quality were more positive for those who communicated FtF. The slope of the line in the IM condition is statistically significant ($B = .27, t = 2.24, p < .05$), while the slope of the line in the FtF condition is not statistically significant ($B = -.11, t = -.87, p = .38$) (See Figure 2). This suggests that self-esteem biases were not present in the FtF condition, but were present in the IM condition. Higher levels of relationship satisfaction were also significantly associated with more positive perceptions of change in relational quality. In other words, individuals who were more satisfied in their relationships rated the conflict's impact on relational quality as more positive than did individuals who were less satisfied in their relationships. Partner-specific attachment anxiety was not a significant predictor of perceived change in relational quality.

Variable	B	SE	p
Intercept	1.28	1.08	.24
Relationship Satisfaction	.53	.12	.00**
Partner-specific Attachment Anxiety	.11	.09	.24
Self-Esteem	.08	.09	.37
Channel [FtF]	-.05	.08	.55
Self-esteem × Channel [FtF]	-.19	.09	.05*

$R^2 = .13$

** $p < .01$, * $p < .05$, ^ $p < .10$

Effect of Dyad: Variance = 1.15, SE = .13, Upper CI = 1.44, Lower CI = .94

Table 2. Model predicting ratings of perceived change in relational quality.

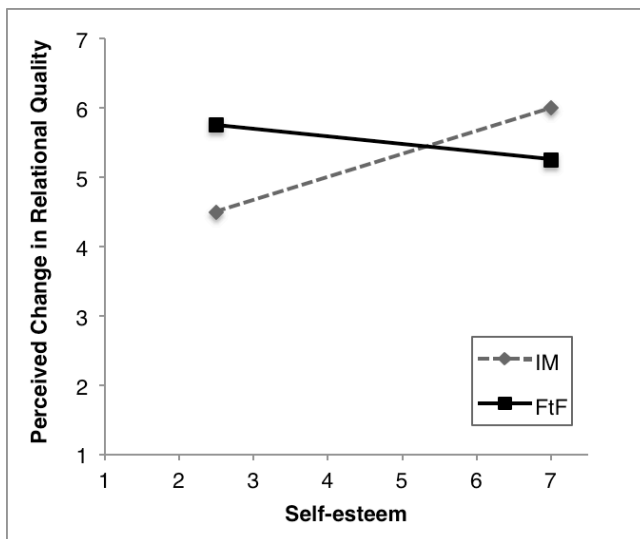


Figure 2. Self-esteem x channel (FtF vs. IM) predicting ratings of perceived change in relational quality.

DISCUSSION

Previous research has found that people with lower levels of self-esteem prefer to use mediated communication across a variety of relational contexts. The current research suggests that the text-based mediated channels LSEs desire may actually be detrimental to their relationships. Higher levels of self-esteem were associated with higher ratings of overall satisfaction with the interaction in IM than they were in FtF, and lower levels of self-esteem were associated with lower ratings of overall satisfaction with the interaction in IM than they were in FtF. The same results were found for ratings of perceived change in relational quality. LSEs reported that the conflict had a more negative impact on relational quality after communicating with their partners via IM than they did after communicating with their partners FtF. These findings provide evidence for the fact that individuals' self-esteem related biases were exhibited when communicating via IM.

The fact that LSEs have different experiences with their romantic partners based on which communication channel they use is of crucial importance, given the popularity of technology-mediated channels like text-messaging and SNSs, and the fact that several studies have now shown that individuals use technology-mediated communication during a conflict with their romantic partners. If using a text-based technology like IM during a conflict becomes the norm, rather than the exception, LSEs may be at an even further disadvantage than they already are given their biases. One solution may be to suggest using multiple channels during a conflict to reap the benefits that each channel uniquely provides. For instance, [42] found that CMC can be helpful during a conflict as a way to ease into a future FtF-based conflict discussion and that different channels can compliment each other in different ways. Individuals could use a variety of communication channels across a conflict discussion to best handle their insecurity-related biases and their relational goals.

In addition, these findings may have implications for people in long-distance relationships (LDRs) since they have less FtF communication with their partners (e.g., [46]). Previous research has demonstrated that LDRs are different from non-LDRs in several ways. For instance, people in LDRs are more likely to avoid conflict, engage in selective positive self-presentation [45], and idealize their partners relative to people in non-LDRs [46]. However, for people in LDRs with low self-esteem, the reliance on technology-mediated communication may actually be a detriment to their relationships. Yet, people in LDRs may have more channel choices than just FtF and IM; future research could investigate the extent to which our findings hold for people in LDRs and across different communication channels like video chat, which has benefits and drawbacks for people in LDRs that are unique from other channels [35].

Results were not entirely in line, however, with what we hypothesized. Self-esteem-related biases were not exhibited in the FtF condition. The lack of self-esteem-related biases in the FtF condition may be due to sentiment override [54], such that participants' high levels of relationship satisfaction were stronger predictors of ratings of overall satisfaction with the interaction than were levels of self-esteem. However, it may be that the ambiguity of IM was enough to trigger participants' self-esteem biases such that these biases influenced ratings of overall satisfaction with the interaction above and beyond the influence of relationship satisfaction. Given that more elements of the interaction that typically indicate meaning (e.g., partner's facial expressions, tone of voice) were unknown in the IM condition, it is possible that this ambiguity triggered LSEs' instincts to question their partners' acceptance and devalue their relationships and HSEs' instincts to draw closer to their partners and enhance their relationships.

Another possible explanation is that LSEs and HSEs actually experience similar levels of satisfaction with the

interaction in IM but that, because LSEs have a stronger preference for, and potentially higher expectations of, using CMC during a conflict with their partner (as found in [43]), when their experiences do not live up to their expectations, they experience cognitive dissonance and thus lower levels of satisfaction with the interaction. Alternatively, HSEs may actually reaffirm their relationship after an IM conflict discussion (through higher ratings of satisfaction with the interaction), precisely because the ambiguity of IM made them have a more negative experience than they might have expected. This supposition is somewhat complementary to the hypothesized relationship between self-esteem and channel (IM's ambiguity allows HSEs more room to project their positive biases), since in both cases, HSEs project positive biases. But, in this alternative explanation, the positive biases emerge to counteract any negative feelings resulting from communicating via IM, as opposed to the hypothesized relationship, which is that HSEs' already positive biases would be even more positive given more room for interpretation.

Earlier, we discussed Walther's hyperpersonal model of communication, which posits that in text-based mediated communication, people may form more exaggerated impressions given that there are fewer relational cues to draw on than there are in FtF communication. The current findings suggest, however, that the hyperpersonal model of communication does not fully account for the individual-difference level traits that influence the processing of social information in mediated communication. Individuals make use of the cues available to form impressions of their communication partners, but this finding suggests that individuals enter into conversations with pre-set biases that also influence the ways in which they form impressions. This finding then suggests that future work investigating theories of mediated communication should not neglect the biases that individuals bring to an interaction, whether they be related to self-esteem or other traits. Furthermore, while the hyperpersonal model allows for the possibility that hyperpersonal communication can be negative, this part of the model is not fully theorized. Future research should further investigate how hyperpersonal communication can lead to interactions that are intensified in a negative manner, and how individual difference biases like self-esteem or personality influence this communication process.

External Validity

Many of the conflict topics discussed by participants have been identified as relational conflict issues in previous work (see [37] for a review). Topics discussed included: communication styles, time management, responsibilities, one partner's personal problem/shortcoming, past relationships, jealousy, trust, lying, sex life, relationship commitment level, living situation, and plans for the future/life choices. Also, it is possible that participants held back during their discussions due to the fact that they were

in a laboratory setting. However, we asked participants "How realistic was your conversation with your partner" (1 = *not realistic at all*, 7 = *very realistic*). The average score was 5.74, suggesting that there is some external validity to the study.

Limitations and Future Work

An important caveat to this work is that, while 'LSEs' and 'lower levels of self-esteem' are used somewhat interchangeably, self-esteem was measured as a continuous variable and not as a categorical variable (e.g., low self-esteem vs. high self-esteem), suggesting that analyses did not truly compare individuals with low vs. high self-esteem. Future work should examine how people who are much lower in self-esteem make assessments of conflict discussions with their partners across communication channels.

In addition, since only nine couples in the study were in long-distance relationships, we do not have enough data to analyze whether our findings may differ for people in long-distance vs. non-long-distance relationships. Since couples in long-distance relationships may use technology to communicate in unique ways, future work should examine whether these findings hold for people in long-distance relationships.

Lastly, this work focuses on one form of CMC – IM. Results may differ across other forms of mediated communication, such as text messaging, email, and video chat, which are all distinct from IM in several ways. Also, while this study examined a conflict discussion that occurred in one communication channel, previous work suggests that couples use multiple channels to communicate during a conflict [42, 43]. Future work should focus on examining the extent to which self-esteem biases are enacted across other forms of CMC, as well as on how experiences communicating through one channel might influence perceptions of the interaction in another channel.

CONCLUSION

Overall, findings suggest that individuals' self-esteem biases are stronger in CMC than in FtF when it comes to their satisfaction with the interaction and assessments of the conflict's impact on relational quality. This suggests that while people with lower levels of self-esteem prefer mediated communication, their preferred channels may not be best suited for their biases and lead to worse interpersonal outcomes.

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