The effect of communication quality and quantity indicators on intimacy and relational satisfaction

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– ABSTRACT –

The purpose of this study was to examine and compare the effect of communication guality and guantity indicators on relational satisfaction and intimacy. Individuals were asked to record all of their interactions with their same-sex friend or romantic partner on a daily basis for a week. A total of 79 participants took part in the study. Results indicated that communication guality indicators explained more variance in both relational satisfaction and intimacy than did communication quantity indicators; however, quantity indicators explained significant variance above and beyond guality indicators for intimacy. Regarding individual communication quality and quantity indicators, the communication quantity indicator of total time in face-to-face interaction related to experiencing intimacy in a relationship. The communication quality indicators of satisfaction with interactions, smooth, and activity related to experiencing relational satisfaction, as did the communication quantity indicator of the total number of face-to-face interactions. Conclusions are drawn regarding the impact of quality and quantity communication in close relationships.

KEY WORDS: communication quality • communication quantity • intimacy • relationship satisfaction

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In today's fast-paced world, many individuals are faced with long work hours, balancing work and family, and long-distance relationships. Recent statistics indicate that the number of individuals who must manage heavy family and career obligations is growing. For example, the numbers of working women with children (Havghe, 1997), dual-earner couples with families (Winkler, 1998), working single mothers (Council of Economic Advisors [CEA], 1999), and working families who are also providing eldercare in their households (Kennedy, LaPlante, & Kaye, 1997) have increased rapidly in the last several decades. In addition, the proportion of individuals working very long work weeks has increased, particularly for those who hold managerial, professional, sales, or transportation occupations (Rones, Ilg, & Gardner, 1997). One outcome of these time demands may be less time spent interacting with significant others. For example, Kingston and Nock (1987) found that couples' time together was negatively impacted by the number of hours the couple worked. Nevertheless, many individuals contend that the time they do spend with a significant other is 'quality time' involving 'quality communication.' However, what specifically is 'quality time?' What is 'quality communication?' Do these characteristics of interpersonal relationships and interactions really allude to something meaningful, or are they only rationalizations for a lack of quantity time and quantity communication?

Quality time and quality communication are mentioned often in the popular literature and within laypersons' conversations. Similarly, research exists within the scholarly literature that emphasizes the positive impact of quality communication within specific communication situations. For example, research indicates that quality communication relates positively to social support (e.g., Badr, Acitelli, Duck, & Carl, 2000), as well as to positive patient–provider relationships (e.g., Nussbaum, Pecchioni, & Crowell, 2001). However, little research exists that has examined the global impact of communication quality and quantity on close, personal relationships. Indeed, it would be valuable to understand the impact of both quality and quantity aspects in our relationships. Such knowledge could aid in our choices of how we manage our time and communication in our relationships. Thus, the purpose of this study was to examine and compare the impact of communication quality and quantity indicators on relational satisfaction and intimacy.

Quality time and quality communication

'Quality time' is a term not found in the scholarly literature. In fact, a search of Psych Lit located no articles on the topic. However, the term 'quality time' is used profusely in the popular literature, surfacing frequently in magazine searches and Internet searches. Indeed, the title of a magazine for parents is *Quality Time Magazine*.

The term 'quality time' was coined in the popular literature in the 1970s. Originally the term applied to parent-child time. When many mothers started working outside the home, they were told that the quality of time – rather than the quantity of time – one spends with children is what matters (Lingren, 1998). Walker (1999), for example, argued that the quality of time that mothers spend with their children is more important than the quantity of time. Since then, the term has taken on broader meaning to refer to time with children, partners, friends, and additional significant others.

Quality time has been defined as focused, uninterrupted time with partners, friends, or children (Lingren, 1998). Quality time should provide the opportunity for meaningful conversations and the chance to do worthwhile activities together (Lingren, 1998). Although the notion of quality time was well meaning, Lingren argued that the notion has seemingly backfired. Specifically, Lingren contended that individuals' moods cannot be forced to a level of closeness solely because it is convenient for us.

Quality time, although not used in the scholarly literature, is similar to the term 'quality communication' used in the communication and personal relationships literature. Keeley and Hart (1994) argued that the 'quality of a personal relationship is inexorably related to the quality of communication between the parties involved in that relationship' (p. 135). But what constitutes high quality communication? According to Montgomery (1988), quality communication is typically thought of as communication that is positive, intimate, and in control. Positive interaction refers to interaction that is supportive, cheerful, and agreeable. It includes such actions as agreement, confirmation, pleasing behaviors, and positive nonverbal behaviors. Intimacy occurs when partners verbally and nonverbally reveal information about themselves. In particular, self-disclosure is assumed to be the paradigm for intimacy. Finally, control refers to partners' ability to manage their communication, and therefore their relationship. Partners control their communication and they do this through the production of coherent conversations, coordinating verbal and nonverbal behavior, metacommunication, and shared meanings.

Quantity of time and quantity of communication

By contrast, other scholars argue that quantity time – not quality time – is what really matters in a relationship (Barnes, 1993). Although not necessarily referred to as 'quantity time' or 'quantity communication' in the communication literature, these concepts are often described and operationalized as 'frequency of contact/communication,' 'length of interaction,' or 'time spent together.' This literature suggests that time spent together and continuous interaction lead to positive relational outcomes such as satisfaction and intimacy (Duck & Pittman, 1994). For example, in a study on dual-earner married couples, Kingston and Nock (1987) found that more time spent together by spouses resulted in higher marital quality and satisfaction. Additional research on marital couples has found similar results; time spent together is related to satisfaction (Gilbertson, Dindia, & Allen, 1998; Kilbourne, Howell, & England, 1990).

Time spent together increases as other types of relationships progress as well (Hinde, 1981). For example, Hays (1988) found that interaction frequency between friends increased as the relationship grew. Emmers and

Dindia (1995) examined casually dating, seriously dating, engaged, and married couples' use of touch in their relationship and found that quantity of communication was most influential in affecting relational intimacy during times of relational development or repair. Emmers and Dindia, however, did not examine communication quality.

Finally, research also exists suggesting positive outcomes for both quality and quantity aspects of communication. For example, Callan (1993) found that subordinates' higher quality and quantity of communication with their managers related to job satisfaction. There is also evidence that communication of low quality and quantity is negatively associated with marital satisfaction, particularly for wives (Schumm, Barnes, Bollman, Jurich, & Bugaighis, 1986).

In summary, what can be ascertained from the research is that both communication quality and quantity are associated positively with relationship outcomes. However, little research has examined and compared the effects of quality time/quality communication and quantity time/quantity communication (referred to as 'quality indicators' and 'quantity indicators' in this investigation) on relational outcomes. In particular, a paucity of research exists that has examined quality and quantity indicators within dating relationships. As mentioned earlier, much of the research on quality and quantity indicators focuses on parents' management of their interactions with children or partners trying to balance the time demands of marriage and work. Given the precariousness of many dating relationships in terms of their maintenance (e.g., Berscheid, Snyder, & Omoto, 1989), examining quality and quantity issues within dating relationships would provide insight into the factors related to relational satisfaction and intimacy. Specifically, it is not known whether quality time or quality communication can compensate for a lack of quantity of time or quantity of communication within a dating relationship. Further, it is unclear whether these indicators are associated in the same way with intimacy as they are with relational satisfaction. Indeed, both relational satisfaction and intimacy are salient relational constructs. Intimacy involves intimate disclosures, affect, and perceptions that one's partner really listens and understands (Prager, 2000). Relational satisfaction involves one's position in the relationship, a partner's meeting of one's needs, and level of contentment with one's relationship (compared to others) (Hendrick, 1988). Given this, the following research questions are presented to explore which quality and quantity indicators best predict relational intimacy and relational satisfaction:

RQ1: Which communication quality and quantity indicators predict intimacy?

RQ2: Which communication quality and quantity indicators predict relational satisfaction?

Method

Sample

Data were collected from undergraduates enrolled in hybrid communication courses at a Midwestern, mid-sized university. Seventy-nine participants (40 women and 39 men) participated in the study. Seven of the participants were freshmen, 40 were sophomores, 13 were juniors, and 19 were seniors. The mean age of the participants was 21.71 years (SD = 3.67), with an age range of 17–40. The mean age of the participant's partner was 23.05 years (SD = 6.91), with an age range of 12–55. Seventy-seven participants reported that they were Caucasian and two reported 'other.' Seventy-three participants reported that their partner's race was Caucasian, two reported Hispanic, one reported Asian, and three reported 'other.'

The mean length of the relationship was 71.08 months or approximately 6 years, with a range of 1–404 months. Sixty-eight of the 79 participants reported that they were in geographically close relationships and 11 reported that they were in long-distance relationships. Following the elimination of unusable surveys (e.g., participants did not follow directions), an examination of the remaining acceptable surveys indicated that participants reported primarily on two relationship types: same-sex friendships and romantic relationships. Overall, 17 men reported on their relationship with a female romantic partner, 15 men reported on their same-sex friendship, 24 women reported on their same-sex friendship, 29.18 months (SD = 22.44) for men's romantic relationships, 73.53 months (SD = 60.44) for men's same-sex friendships, and 159.33 months (SD = 135.88) for women's same-sex friendships.

Procedures

Participants were instructed to choose one person with whom they had a close relationship and report on all of their interactions with that person for a week. Following each interaction with the partner, participants were asked to complete a modified (i.e., shortened) version of the IOWA Record. Specifically, participants reported every interaction they had with their partner (i.e., frequency); the length of the interaction; the medium (e.g., phone, face-to-face); whether the nature of each interaction was for task, social, or relational reasons; whether or not they were engaged in an activity during the interaction; and how satisfied they were with the interaction.

Participants submitted their records daily, except for the weekend. Weekend records were submitted on the following Monday. At the beginning of the week-long study, participants completed biographic and demographic questions about themselves, their partner, and their relationship. At the end of the week, participants completed Hendrick's (1988) Relationship Assessment Scale (RAS) and the Miller Social Intimacy Scale (MSIS; Miller & Lefcourt, 1982). Overall, participants reported experiencing 1 to 23 interactions with their partner during the week. Participants also answered one dichotomous question regarding how typical the quality and quantity of their interaction was during the reported week: (1) *typical* and (2) *atypical*; the mean response was 1.26 (SD = .44), thus indicating that the majority of participants perceived their week's worth of interactions as typical.

Measures

Intimacy

Intimacy was operationalized using the MSIS (Miller & Lefcourt, 1982). The MSIS is appropriate for both geographically close and distant relationships, as well as platonic and romantic relationships. Items are rated on a scale of 1–10 from *very rarely* to *almost always* and include, for example, 'How often do you confide very personal information to him/her?' 'How often are you able to understand his/her feelings?' and 'How often do you feel close to him/her?' Reliability of the MSIS with the present sample was .93 (Cronbach's alpha).

Relational satisfaction

Relational satisfaction was operationalized by using participants' scores on Hendrick's (1988) 7-item RAS. To avoid confusion among the participants in the current study, Hendrick's 1–5 response scale was replaced with a 1–10 scale to keep it consistent with the range of the MSIS, which was presented on the same page in the survey. In addition, the seven questions used in Hendrick's scale were reworded as statements. For example, the question, 'How well does your partner meet your needs?' (*poorly* to *extremely well*) was written as, 'My partner meets my needs' (*strongly agree* to *strongly disagree*). Consistent with past research, the reliability of the scale in the present sample was .89 (Cronbach's alpha).

Communication quantity

Communication quantity was operationalized by tabulating the frequency of each interaction as well as the length of each interaction. Specifically, each participant's total number of face-to-face interactions (face#), total number of phone interactions (phone#), total face-to-face time (facetime), and total phone time (phonetime) were calculated. There were too few e-mail and letter communications to include these variables in the analyses.

Communication quality

The seven indicators of communication quality used for analysis were derived from Duck, Rutt, Hurst, and Strejc's (1991) Iowa Communication Record (ICR). The ICR extends the Rochester Interaction Record (RIR), which did not ask explicitly about the quality of interaction that took place. The ICR includes several scales adapted from the RIR to assess the quantity of interaction and includes a number of other items assessing the quality of interaction. In addition, the ICR includes several measures of the conversational context, such as the partners' activities during the conversation.

The results of Duck et al.'s (1991) factor analysis of the ICR indicated four factors or dimensions of communication/interaction: communication quality, communication value, degree of change brought about by the interaction, and control of the interaction (who initiated the talk, who controlled the conversation, and who ended the conversation). For the purpose of this study, quality of communication was operationalized by first selecting 10 items from the ICR that represent the quality, value, and control dimensions identified by Duck et al. (1991). No items from the change dimension were used because it does not represent the quality or quantity of communication. In addition, the 'interesting/boring' item was replaced with 'judgmental/nonjudgmental' to better reflect the research on communication quality, and the 'satisfied/not satisfied' item was

not included so that it could be used as a separate measure for the purposes of the investigation. Thus, the final set of items included relaxed/strained, impersonal/personal, attentive/poor listening, formal/informal, in-depth/superficial, smooth/difficult, guarded/open, great deal of understanding/great deal of misunderstanding, free of communication breakdowns/laden with communication breakdowns, and free of conflict/laden with conflict. All items were presented on bipolar scales separated by numbers from one to nine. Participants answered these items after every interaction and responses to the items were summed over the course of the week.

These items were submitted to a principal components analysis with Varimax rotation. Using eigenvalues, scree plots, and the 60/40 rule as guides, two dimensions of communication emerged. The first was labeled *depth* of communication and contained two items: impersonal/personal and in-depth/superficial. The second was labeled *smoothness* of communication and contained three items: relaxed/strained, free of communication break-downs/laden with communication breakdowns, and free of conflict/laden with conflict. Reliability of the depth dimension was .86 (Cronbach's alpha) and reliability for the smoothness dimension was .91 (Cronbach's alpha).

In addition to the depth and smoothness quality indicators, three other items from the ICR were selected to measure related aspects of interaction quality. These included an item assessing whether or not the talk accomplished *social functions* (1 = *strong agreement*, 9 = *strong disagreement*), an item assessing whether or not the purpose of the talk was *task oriented* (1 = *strong agreement*, 9 = *strong disagreement*), and an item measuring whether or not the function of the talk was to facilitate the relationship (i.e., *relationship talk*) (1 = *strong agreement*, 9 = *strong disagreement*). These items represent the purpose of the talk. Although these items do not represent quality in a fashion similar to depth and smoothness, they are more consistent with communication quality than communication quantity. Similar to the other quality items, participants responded to these items after every interaction and responses to the items were summed over the course of the week.

The third aspect of communication quality was satisfaction with the interaction. This indicator was represented by the single item 'satisfied/not satisfied,' taken from the ICR. Specifically, satisfaction with the interaction was operationalized by measuring participants' reported satisfaction after every interaction on a scale of 1-9 (1 = satisfied, 9 = not satisfied). Reliability of the satisfaction with interaction items was .93 (Cronbach's alpha). Finally, in addition to examining the dimensions of talk and the functions of talk, examining whether or not the partners were engaged in an activity during the talk was of interest. Thus, consistent with the ICR, an item examining whether the interactants were engaged in an *activity during the talk* (e.g., making dinner) was included.

In sum, seven communication quality indicators (depth, smoothness, social function, task function, relational talk, satisfaction with interactions, and presence of an activity), and four communication quantity indicators (face#, phone#, facetime, phonetime) were used in this study. A summary of the variables is given in Table 1.

Correlations were conducted between the seven quality indicators and the two dependent variables (relationship satisfaction and intimacy). Similarly, correlations were conducted between the four quantity indicators and the two dependent variables. An overview of significant correlations is given in Table 2.

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Variable	Range	М	SD
Quality indicators			
Depth	1-9 (lower number indicates more depth)	3.54	1.34
Smooth	1–9 (higher number indicates more		
	smoothness)	7.43	.92
Social	1–9 (lower number indicates more social		
	function)	2.58	1.58
Task	1–9 (lower number indicates more task focus)	2.14	1.42
Relational talk	1-9 (lower number indicates more relational		
	talk)	2.24	1.49
Interaction sat.	1-9 (lower number indicates more satisfaction)	3.58	1.83
Activity	0-1 (0 = yes, 1 = no)	.50	.23
Quantity indicators			
Phone#	0–9 (number of telephone conversations		
	with partner)	2.75	2.31
Face#	0–19 (number of face-to-face interactions		
	with partner)	8.07	4.43
Phonetime	0–195 (minutes spent on the phone with		
	partner)	35.58	39.09
Facetime	0-3310 (minutes spent face-to-face with		
	partner)	1005.24	834.32
Dependent measure	25		
Intimacy	1-10 (1 = low intimacy, 10 = high intimacy)	8.31	1.23
Satisfaction	1-10 (1 = not satisfied, $10 =$ very satisfied)	8.17	1.87

TABLE 1
Means, standard deviations, and ranges of independent and dependent
variables

 TABLE 2

 Significant correlations between quality and quantity indicators and dependent variables (N = 79)

Indicators	Relational Satisfaction	Relational Intimacy		
Quality indicators				
Depth		.54**		
Smooth				
Social	.33**	.26*		
Task	.26*	.38**		
Relational talk		.51**		
Satisfaction with interactions	.28*	.47**		
Activity	.33*			
Quantity indicators				
Face#	.33**	.45**		
Phone#				
Facetime		.44**		
Phonetime				

* p < .05; ** p < .01.

Both communication quality and quantity indicators were examined to assess whether or not multicollinearity was of concern. Various criteria exist to assist in making this assessment. First, an examination of the bivariate correlation matrix was conducted to detect any bivariate correlation over .80 (Stevens, 1996). No such correlations existed. Second, the predictors' variance inflation factors (VIF) were examined to assess if any VIF values exceeded 10 (Stevens, 1996). Again, no VIF value was close to 10. Finally, each predictor was regressed on every other predictor for both communication quality and quantity indicators to assess if any R^2 neared 1.00, which would indicate high multicollinearity. Berry and Feldman (1985) argued that this technique is preferred over simply examining the bivariate correlations for multicollinearity because it identifies the source of multicollinearity. Results of the numerous regressions indicated no excessively large interrelations among the many predictor variables. Thus, it was concluded that multicollinearity was not a concern.

Results

Research Question 1

The first research question asked which communication quality and quantity indicators predict intimacy. To answer this question, a hierarchical regression model was executed, entering the seven quality predictors in the first block and the four quantity indicators in the second block. This ordering decision was made based on previous research regarding quality and to provide the most rigorous test of what quantity contributed. The model was significant for the quality indicators (F(7,65) = 5.25, p < .001), with 36% of the variance in intimacy being explained by the set of seven quality indicators ($R^2 = .36$, adj $R^2 = .29$). An examination of quality predictors indicated that no individual predictor was significant, although the predictor of smooth approached significance (p < .07).

The block of four quantity indicators was also significant (F(4,61) = 2.78, p < .034), explaining approximately 10% of the variance in intimacy beyond the quality indicators ($R^2 = .46$, adj $R^2 = .36$). An examination of the individual indicators revealed that the quantity indicator of length of face-to-face interactions (facetime) was significant (standardized beta = .30, p < .006). This finding suggests that lengthy, face-to-face interactions with one's partner predict higher intimacy in the relationship.

Research Question 2

The second research question asked which communication quality and quantity indicators predict relational satisfaction. To answer this question, a hierarchical regression model was executed, entering the seven quality predictors in the first block and the four quantity indicators in the second block. The model was significant for the quality indicators (F(7,65) = 3.33, p < .004), with 26% of the variance in relational satisfaction being explained by the set of seven quality indicators ($R^2 = .26$, adj $R^2 = .19$). An examination of the individual indicators revealed that the quality indicators of satisfaction with the interaction (standardized beta = -1.28, p < .005), smoothness of the interaction (standardized beta = .34, p < .006) were significant.

The quantity indicator block was not significant, although it explained 7% of the variance beyond the quality indicators. It is likely that the low variable-to-subject ratio contributed to the nonsignificance of the quantity block. However, the quantity indicator of number of face-to-face interactions (face#) was significant within the block (standardized beta = .96, p < .028). Taken together, these results suggest that having frequent, smooth, and satisfying interactions with one's partner, and engaging in an activity during the interactions were related to partners being satisfied with their relationship.

Discussion

As expected, communication quality indicators were significant predictors of both intimacy and relational satisfaction; although accounting for somewhat more of the variance in intimacy than in satisfaction, the blocks were significant in both cases. For intimacy, the block appeared to be a coherent set of predictors, and, for satisfaction, the contribution appeared to be carried by three indicators: satisfaction with the interaction, smoothness of the interaction, and engaging in an activity during the interaction.

Communication quantity indicators contributed only 10% additional variance in intimacy, although the length of the face-to-face interaction was important. Communication quantity indicators did not predict relational satisfaction except in the case of number of face-to-face interactions.

Overall, personal contact versus other modes of contact (e.g., phone) appeared to be particularly relevant to the experience of both intimacy and relational satisfaction in the relationship. This finding aligns with previous research suggesting that nonverbal cues (e.g., proximity, physical presence, facial expression) are necessary for maintaining close and satisfying relationships (e.g., Keeley & Hart, 1994; Rice & Love, 1987).

Whereas the set of communication quality indicators predicted intimacy, numerous individual communication quality indicators significantly related to relational satisfaction. Specifically, partners being satisfied with their interactions related to their being satisfied with their relationships. This result is not surprising and aligns with other similar results (e.g., Duck et al., 1991). In addition, interactions that were characterized as being smooth, relaxed, and free of communication breakdown and conflict were experienced in satisfying relationships. This finding supports earlier work indicating that experiencing smooth interactions was a quality characteristic of satisfying relationships (e.g., Duck et al., 1991; Knapp, Ellis, & Williams, 1980). Engaging in an activity during communication related to relational satisfaction. This finding aligns with past research suggesting that partners engaging in shared activities relates to satisfaction (e.g., Stafford & Canary, 1991). This result also reflects the notion that communication does not occur in a vacuum. Specifically, we interact while doing things together and doing things together makes for positive relational experiences.

Participants reported that the communication quantity indicator of facetime related to their experience of intimacy. This finding suggests that contact frequency is not necessarily mandatory for a close relationship.

Rather, this result suggests that when partners do have contact, it is the *length* of that contact that contributes to their experiencing closeness with their partner. This finding supports previous research asserting that time spent together and lengthy interaction hold positive relational outcomes (Duck & Pittman, 1994). Similarly, other research has also found the quantity of communication to be influential, particularly during times of relational development or repair (Emmers & Dindia, 1995).

Regarding communication quantity and relational satisfaction, the frequency of contact related to satisfaction with the relationship, although it was not significantly related to intimacy. This result holds salient implications for long-distance relationships and relationships that do not experience a high frequency of contact. Guldner and Swenson (1995) found that long-distance relationships did not differ in relational satisfaction when compared to relationships that experienced more contact. Yet, the results of this study suggest that frequency of in-person contact plays a salient role in relational satisfaction. This finding aligns with other research indicating that being together often results in higher relational quality and satisfaction (e.g., Duck & Pittman, 1994; Gilbertson et al., 1998; Kilbourne et al., 1990; Kingston & Nock, 1987).

Limitations

Although valuable information was learned from this investigation, it is not without limitations. One limitation of this investigation was sample size. Given the nature of the data collection, however, it was understandable that large numbers of individuals were not likely to keep a diary of every interaction with their chosen partner for an entire week. Nonetheless, the fact that numerous individuals kept daily records for an entire week is a contribution.

A second limitation of this research is that it relied on self-report data. Although participants were instructed to complete their diaries immediately following an interaction, there was no way to ensure that the instruction was followed. However, participants did submit their diaries each day (except the weekend, after which diaries were submitted on Monday).

A third limitation is that no pretest data were collected. Indeed, it would have been of value to examine individuals' satisfaction and intimacy levels prior to the collection of the week's worth of interactions. Not pretesting presented a chicken-and-egg quandary. Specifically, it is not known if participants reported satisfactory interactions because their relationships already experienced elevated levels of closeness and relational satisfaction, or if satisfactory interactions contributed to relational satisfaction and closeness. Thus, future research might consider examining this phenomenon from a longitudinal approach. Relatedly, given that the data in this study were collected in a nonexperimental design, causation could not be examined. Finally, this study utilized a one-item measure of interaction satisfaction. Although this is consistent with the ICR, more in-depth measures of communication satisfaction exist (e.g., Hecht, 1978).

Future considerations

Future researchers may want to consider examining communication quality and quantity indicators from a variety of approaches. As mentioned earlier, examining this phenomenon with a larger sample and in a longitudinal design would be valuable. In addition, examining these variables in a variety of relationship types (e.g., gay and lesbian relationships, married couples with children) is of interest. Similarly, examining friendships and romantic relationships that have developed online and which factors contribute to their closeness and satisfaction would be fruitful. Indeed, relationship development online is a burgeoning phenomenon (e.g., Mazur, Burns, & Emmers-Sommer, 2000). It would be of interest to examine how quality and quantity indicators examined in this investigation are affected and/or modified by an online medium and what their effects are on communication and relational outcomes.

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