
Online Pauses and Silence: Chronemic Expectancy Violations in Written Computer-Mediated Communication

Communication Research

38(1) 54-69

© The Author(s) 2011

Reprints and permission: <http://www.sagepub.com/journalsPermissions.nav>

DOI: 10.1177/0093650210378229

<http://crx.sagepub.com>



Yoram M. Kalman¹ and Sheizaf Rafaeli²

Abstract

This study examines e-mail response latency as an expectancy violation and explores its impact. Managers evaluate job candidates who varied in their response latency to an e-mail (1 day, 2 weeks, and silence for more than a month) and in their reward valence. As predicted by expectancy violations theory, candidate reward valence moderates the effect of response latency on variables such as applicant evaluation, credibility, and attractiveness. A norms-based definition of online silence is presented, and the influential and complex role of response latency and of online silence as nonverbal chronemic cues in written CMC is elaborated.

Keywords

expectancy violations theory, online silence, computer-mediated communication, response latency, silence, chronemics, nonverbal cues

Pauses and silences are an integral part of communication (Tannen & Saville-Troike, 1985). Bruneau (1973) demonstrated the ubiquity and centrality of silence when he wrote “Silence is to speech as the white of this paper is to this print” (p. 18). Silence is treated by some as an insignificant background, a meaningless default, and a useless emptiness. This treatment

¹The Open University of Israel, Ra'anana, Israel

²University of Haifa, Haifa, Israel

Corresponding Author:

Yoram M. Kalman, Department of Management and Economics, I University Road,
Ra'anana, 43107, Israel

E-mail: yoramka@openu.ac.il

is not justified: Pauses and silences are a part of the message, and given that "One cannot not communicate" (Watzlawick, Beavin, & Jackson, 1967, p. 49) silence communicates a message too, and it is an important nonverbal component of communication (Jaworski, 1999).

Pauses and silences are also an integral component of computer-mediated communication (CMC), and such silences and pauses can have significant negative impact on the effectiveness of online work (Cramton, 2001; Panteli & Fineman, 2005; Tyler & Tang, 2003). Research on silence in online communication is challenged by methodological and conceptual issues, and consequently little progress has been made in the research of pauses in CMC, and even less in the research of online silence. In this article we propose to examine online silence as an expectancy violation and to apply the body of knowledge and the methodologies developed in the context of expectancy violations theory (EVT; Burgoon & Hale, 1988), to better understand this intangible and important phenomenon.

Time in CMC

The study of pauses and silences is tightly linked to the study of time in communication. It has long been recognized that time is an important aspect of CMC (Hesse, Werner, & Altman, 1988). The differences between the temporal aspects of traditional face-to-face communication and of CMC explain many of the relative advantages and disadvantages of CMC when compared to traditional communication (Walther, 2002): Earlier studies (e.g., Hiltz, Johnson, & Turoff, 1986) of traditional versus CMC suggested a superiority of face-to-face communication over CMC. A meta-analysis of such studies showed that the time restrictions imposed on the CMC communicators in some of the experiments could explain away these findings (Walther, Anderson, & Park, 1994) and that social communication in CMC groups that are given sufficient time to exchange messages are not as different from groups using traditional communication.

Of special interest for the study of online pauses and silence is the study of chronemic cues in online communication. Chronemic cues are nonverbal, time-related cues such as pauses, time of day, and silence. Walther and Tidwell (1995) were the first to show that despite the claim that CMC filters out nonverbal cues, chronemic cues play an important role in online communication. They showed that differences in the time of day an e-mail message is sent, from daytime to nighttime, or the mere delay of a response by 24 hours, significantly influence the relational communication expressed in a message. These chronemic changes can alter the degree of liking the communicator expresses and the sense of urgency communicated by the message. Walther and Tidwell also showed that these two chronemic variables interact with message content: whether the message was task oriented or socially oriented. In their pioneering work on the role of chronemics in CMC, Walther and Tidwell did not explore pauses longer than 1 day, nor online silence.

Online Silence

Long pauses and online silence have been described in three studies that emphasized the disruptive potential of long pauses and of silences in an organizational context. Cramton

(2001) explored problems encountered by 13 distributed teams that collaborated across national boundaries and across many time zones. She identified that one of the key factors that negatively influenced the effectiveness of online collaboration was the problem of interpreting the meaning of online silence. This was the most common problem identified in the study. It turned up in all teams and led to increased uncertainty and to unfortunate misunderstandings within the teams. Uncertainty about online silence resulted in difficulty to know when a decision has been reached.

Panteli and Fineman (2005) reviewed the literature on virtual workers and concluded that such workers are easily frustrated if they do not get a quick explanation for a coworker's silence, that they tend to err on the side of being too harsh when interpreting the intentions or motives of silent virtual co-workers, and that virtual silences can easily escalate the breakdown of a virtual team or relationship.

Tyler and Tang (2003) explored rhythms in e-mail communication, describing the user *response expectations*: the senders' expectations as to when they anticipate to receive a response to a message they sent. Tyler and Tang label *breakdown perception*: "when the sender [of the e-mail message] believes that something has gone wrong, and will take further action" (p. 253). That stage of breakdown perception is the stage at which a pause is already too long and is perceived as silence. Taken together, these three studies describe several causes and several consequences of online silence and reveal the significant harm online silence can cause. The conclusions of these studies also emphasize the need to move beyond generalizations and explore online silence in more detail.

Dabbish, Kraut, Fussell, and Kiesler (2005) examined factors that affect e-mail responsiveness (and, consequently, also e-mail unresponsiveness) in a sample of university staff and students. Their analysis of survey results showed that 35% of respondents' incoming messages were classified as requiring a response. Of those, two thirds required an immediate reply, and one third required a reply that users postponed. In a quantitative model that predicts the probability of replying to a message, variables that increase the probability of a response include high message importance, being classified as an information request, and being classified as a social message, whereas messages sent to several recipients were less likely to receive a reply. Having a work relationship with the sender increased the importance assigned to the messages but decreased the probability of replying nevertheless.

Chronemic Expectancies, Chronemic Norms, and Expectancy Violations

EVT in nonverbal communication research originally attempted to explain why some invasions of private space result in a negative reaction and why in other cases similar violations of proxemic norms result in positive reactions. Later, EVT was expanded to apply to other nonverbal behaviors and to involvement violations in general (Burgoon & Hale, 1988). The theory posits that when expectations are violated (e.g., when a person we are comfortably conversing with significantly decreases conversational distance), our attention to this nonverbal aspect of the conversation is heightened. Consequently, we

attempt to interpret and evaluate this violation: Is it positively evaluated (e.g., the other person's decreased conversational distance is a pleasant act of increased intimacy) or is it negatively evaluated (e.g., the decrease in distance is an unpleasant or threatening act)? EVT research has shown that often the evaluation of a violation is a function of our assessment of the person who committed it. To take the foregoing example, the decrease in the conversational distance by a highly rewarding person who is attractive and appealing to us is more likely to be judged as a positive violation than the same action by a low-rewarding person who we judge as unattractive or repulsive.

An example of this interaction predicted by EVT is provided by Sheldon, Thomas-Hunt, and Proell (2006), who studied perceptions about delays in online replies. In the two studies reported, the length of reply response latency was held constant, and the response latency expectancy and the responder's status were manipulated experimentally. The results support EVT: Responder status moderated the negative effect of the chronemic expectancy violation, so that a delayed response from a high-status partner was evaluated more positively than an identical delay from a low-status partner. The authors conclude by emphasizing the critical role of the status of delayers in determining the reaction to the delay and how a delayer's high status can significantly ameliorate the negative effect of the delay.

In a pivotal study of nonverbal expectancies, Burgoon and Walther (Burgoon & Walther, 1990) set out to understand how expected or unexpected various nonverbal behaviors are, what evaluations are assigned to these behaviors, and how these evaluations are moderated by communicator reward valence as well as by communicator gender. In that study the authors clarified the concept of expectancy by asserting that "communication expectancies are cognitions about the anticipated communicative behavior of specific others, as embedded within and shaped by the social norms" (p. 236). They went on to distinguish between "expectancy" for what is predicted to occur, rather than what is desired. By making that distinction, they separated *expectancies* from *evaluations*. They also develop scales to measure these two distinct variables: expectancy and evaluation. The results of the study demonstrated nonverbal behaviors that are more expected than others, how various nonverbal behaviors are evaluated, and how they affect outcomes such as communicator credibility, attractiveness, and relational message interpretation.

Unlike most EVT studies, the Sheldon et al. (2006) study did not explore participants' chronemic expectations but rather induced the expectations for online response latencies experimentally and explored the violation of this experimentally manipulated expectation. Moreover, the participants' attention was drawn to the issue of response latency through the inclusion of a question that explicitly asked the participants to evaluate whether the respondent's response latency was the one they expected. Typically, expectancy violations studies, like the Burgoon and Walther study described previously, assume that the expectations exist in the participant population and explore the consequences of violating the expectancies. Expectancy is then measured through a general expectedness scale that is not specific to the independent variable being measured. The question that is still unanswered, then, is whether there are norms of online responsiveness, and if there are, whether we can observe the consequences of their violation without setting expectations experimentally.

A study by Kalman, Ravid, Raban, and Rafaeli (2006) of online response latencies in online communication revealed stable patterns of response latency across a range of communication media and user populations. In an analysis of large repositories of online messages, they identified a highly asymmetric distribution of response latencies. For example, a large collection of e-mail response latencies in one U.S.-based corporation showed that more than 85% of the responses were sent within 29 hours and that only 3% of the responses were sent after 12 days or more. The authors suggest that a pause longer than one order of magnitude above the average response latency is online silence. In the case of the corporate e-mail repository they explored, this is a pause longer than 12 days. Nevertheless, their suggested definition of *online silence* assumes that the distributions found in this study are reflected in the expectations of everyday e-mail users. This assumption about user expectancies needs to be explored before the definition of online silence proposed by Kalman et al. is accepted.

The study of online pauses and silence should be informed by definitions of traditional silence. Pauses are a normal part of conversation, and Tannen (1985) suggests that a pause is silence "when it is longer than expected, or in an unexpected place, and therefore ceases to have its 'business as usual' function and begins to indicate that something is missing" (p. 109). McLaughlin and Cody (1982) defined *lapses* (or extended silences) as those lasting 3 s or more, citing several studies that show that normal switching pauses in conversation were of a duration of less than 1 s, that pauses of more than 3 s were absent from spontaneous speech, and that silences of more than 3 and 4 s significantly affected ratings of social competence.

In conclusion, we see several studies that point to the existence of norms in e-mail responsiveness. None of these studies clearly demonstrates the existence of these norms or the consequences of their violation. In this study we utilize EVT to demonstrate these norms and to explore the consequences of their violation by total silence or by a longer than normative pause followed by a response.

Hypotheses

The "longer than expected pause" by Tannen (1985) and the "lapse of three seconds or more" by McLaughlin and Cody (1982) suggest that conversations have norms involving expected response latencies and that when the expectations are not fulfilled and the response is not timely, reactions ensue. If we assume that users' expectancies reflect the distributions described by Kalman et al. (2006) and the expectancies described by Tyler and Tang (2003), then we should be able to verify the expectation that a response to an e-mail question will be received within the normal average response latency of about 1 day, as well as to measure the reactions to violations of this expectation if an e-mail question is followed by more than 12 days of unresponsiveness.

An experiment measured the reaction to an e-mail response received after 1 day (normal, average response latency); after 2 weeks (a pause slightly longer than the 12-day latency identified by Kalman et al. (2006), as the beginning of the "long silence" zone); and *never* (a month goes by, and no response is received). We hypothesized that when an e-mail is sent a 1-day latency is more expected than a 2-week latency or *never*. What will be the consequences of online silence? Based on the mostly negative impact of workplace-related e-mail

silence presented earlier and by EVT, the expectancy violation is hypothesized to negatively affect the evaluation of the addressed party by the person who expects to receive the answer. We explored the possible impact of online response latency and silence in this study on several variables that have been shown in the past to be influenced by expectancy violations and for which validated scales exist: evaluation, social and task attraction, three measures of relational message interpretation, and credibility. Thus, it was hypothesized that

Hypothesis 1: An e-mail response latency of 1 day will be more expected and will lead to more positive evaluations of the responder than the longer response latency of 2 weeks or no response at all.

EVT predicts that in cases of ambiguous nonverbal cues, when there is more than one interpretation for the violation, the reward valence of the communicator influences the interpretation of the violation. An example of this moderating effect of reward valence was described by Sheldon et al. (2006). Thus,

Hypothesis 2: The effect of e-mail response latency on perceptions of the responder will be moderated by candidate reward valence.

Method

The stimulus employed in this study is a vignette: a relatively short description of a concrete situation, followed by questions that elicit a judgment or a decision from the participant. In the study, different participants received vignettes that differed only in the independent variables under investigation. All other elements of the vignette were held constant. This allowed us to examine the effect of the independent variables on the participant's judgment of the situation described in the vignette (Finch, 1987). The vignette method is an effective tool for measuring norms and attitudes, which makes it an appropriate method to explore the chronemic norms of e-mail users, and is the method that was used in previous work on e-mail chronemics (Sheldon et al., 2006; Walther & Tidwell, 1995).

A short, paper-based vignette (see Appendix) was handed out to each participant, followed by identical sets of questions, and by a brief demographic questionnaire. Participants were 55 graduate students enrolled in an MBA program at an Israeli university. Average age was 36 years ($SD = 6.8$), 31% were women, and all participants used e-mail on a daily basis or at least several times a week. The participants were asked to volunteer and dedicate 10 to 15 min between classes to complete the questionnaire. No compensation or class credit were offered.

The vignette used in this study was inspired by a similar face-to-face EVT experiment carried out by Burgoon, Manusov, Mineo, and Hale (1985). The participants read about a job candidate and were asked to form an impression of the candidate and respond to a questionnaire about the candidate. Each participant was randomly assigned one version of a total of six (2×3) versions of the vignette. The vignettes varied by the candidate's reward valence (high-reward valence and low-reward valence) and by his e-mail response latency (1 day, 2 weeks, no response at all for more than a month). The high-reward valence of the

Table 1. Intercorrelations Between Dependent Variables

Variable	1	2	3	4	5	6	7	8
Expectedness	—	.77	.57	.64	.52	.32 ^a	.69	.70
Evaluation		—	.74	.77	.70	.41	.75	.77
Social attraction			—	.76	.46	.07 ^a	.42	.69
Task attraction				—	.46	.16 ^a	.54	.74
Immediacy/affection					—	.51	.58	.60
Similarity/depth						—	.59	.35
Receptivity/trust							—	.74
Credibility								—

Note: Unless otherwise noted, correlations are significant at $p < .01$.

a. Not significant ($p > .01$).

candidate was operationalized by describing him as a candidate who made a very positive impression on the participant and who seems very well suited for the job, whereas the low-reward valence candidate was described as not making a good impression and of being unsuitable for the job. In the questionnaire, participants were asked to respond to a set of questions measuring their impression of the candidate and the likelihood that they will recommend the candidate for the position.

The dependent variables were based on adaptations of existing scales commonly used in EVT research. The adaptation was twofold: a translation from English into Hebrew, and an adjustment of the scales that were used for face-to-face situations for the measurement of impressions from online behavior. The adaptation resulted in a set of eight scales with acceptably high standardized Cronbach's alpha reliabilities: The Cronbach's alpha values measured for *expectedness* and *evaluation* (Burgoon & Walther, 1990) were .81 and .86, respectively; for *social attraction* and *task attraction* (McCroskey & McCain, 1974), these were .85 and .87, respectively; for *immediacy/affection*, *similarity/depth* and *receptivity/trust* (Burgoon & Hale, 1987), these were .72, .75, and .75, respectively; and for *credibility* (McCroskey & Young, 1981), the value was .76. Likelihood to recommend was based on a single question adapted from Burgoon et al. (1985). A correlation matrix of the dependent variables is presented in Table 1. Responses are on a 7-point Likert-type scale. A higher score denotes a more positive evaluation.

Results

Manipulation Checks

Manipulation checks were performed to confirm that the reward valence manipulation was perceived by the respondents. A t test comparing two independent samples was performed to compare evaluations of high- and low-reward valence candidates. As expected, evaluation differed significantly, $t(53) = -2.99$, $p = .004$. In addition, a chi-square analysis of the

likelihood of recommendation for the job showed strong dependency ($p < .001$) between high-candidate-reward valence and the likelihood of being recommended.

Hypotheses

A MANOVA test was performed to identify effects of response latency and of reward valence on the dependent variables, as well as interactions between latency and reward valence. Following the finding that response latency significantly influences at least one of the dependent variables, a two-way ANOVA was performed for each of the dependent variables to identify main effects of response latency and of reward valence, as well as interactions between latency and reward valence. The ANOVA was followed by a post hoc test, Duncan's multiple range test, to see which effects of response latencies are statistically significant ($p < .05$). These are presented in Table 2. To gain a deeper understanding of interactions between reward valence and response latency, a one-way ANOVA was performed separately for each of the two reward valence levels, measuring the main effect of response latency at each reward valence level. This test too was followed by Duncan's multiple range test, as described earlier. These are summarized in Table 3 and in Figure 1. A t test revealed no significant differences between the responses of men and of women for any of the dependent variables.

A Wilks' λ statistic that included all dependent variables revealed a significant effect of latency on the dependent variables, Wilks' $\lambda = 0.45$, $F(16, 84) = 2.59$, $p = .003$, $\eta^2 = .33$, and a significant interaction between latency and valence, Wilks' $\lambda = 0.54$, $F(16, 84) = 1.92$, $p = .03$, $\eta^2 = .27$. Hypotheses 1 and 2 were supported. Univariate analysis of the main effect for each dependent variable showed that response latency significantly affected all dependent variables, except for social and task attraction (Table 2). This main effect was moderated by reward valence so that in the case of high-reward valence the longer latency and silence conditions significantly reduced most of the dependent variables, whereas in the case of low-reward valence the longer latency did not significantly affect any of the dependent variables, and silence significantly lowered only three of the dependent variables (Table 3 and Figure 1).

A chi-square analysis of the effect of latency on the likelihood of recommendation to recruit the candidate was performed. The seven possible answers were dichotomized by removing the equivocal responses ("My opinion is balanced between yes and no") and grouping all of the positive responses and all of the negative responses. The analysis showed that the silence condition significantly decreased the likelihood of recommending the applicant from 57% to 19% and increased the likelihood of not recommending the applicant from 43% to 81%.: $\chi^2(1, n = 35) = 5.41$, $p = .02$, $\phi = .39$. A 2-week delay had a similar, though slightly less than statistically significant, impact: $\chi^2(1, n = 30) = 3.21$, $p = .07$, $\phi = .33$.

Discussion

This study set out to explore the impact of long response latencies and of silence in e-mail communication. The study was carried out under the framework of EVT, which predicts,

Table 2. Main Effects of (Reward) Valence and Latency, and Interactions, on Expectedness, Evaluation, Two Attraction Variables, Three Relational Message Interpretation Variables, and Credibility (Two-Way ANOVA, $N = 55$)

	F model	η^2	F value: Valence	F value: Latency	F value:Valence \times Latency
Expectedness	$F(5, 49) = 4.41^{**}$	.31	2.49	4.90*	4.35*
Evaluation	$F(5, 49) = 4.72^{**}$	.33	8.75**	4.74*	1.79
Social attraction	$F(5, 49) = 9.43^{**}$	.49	31.96**	2.13	4.50*
Task attraction	$F(5, 49) = 7.62^{**}$	.44	30.85**	1.60	0.67
Immediacy/affection	$F(5, 49) = 3.53^{**}$	.26	0.87	5.92**	1.49
Similarity/depth	$F(5, 49) = 8.29^{**}$	.46	0	18.05**	1.33
Receptivity/trust	$F(5, 49) = 4.38^{**}$	.31	0.28	8.24**	1.45
Credibility	$F(5, 49) = 3.89^{**}$	.28	6.80*	4.22*	1.09

* $p < .05$ ** $p < .01$

in the case of ambiguous nonverbal cues, that the effect of expectancy violations will be moderated by violator valence. Pauses and silence are such ambiguous cues, and the MANOVA carried out in this study has shown both the significant impact of response latency on the dependent variables and the interaction between latency and the valence of the applicant. Given this interaction, we will separately examine the impact of response latency on high-reward valence and on low-reward valence candidates.

In the case of the high-reward candidate, we see that the 2-week and *never* latencies were significantly less expected than the 1-day latency. This is in line with the conceptualization of long online response latencies and of online silence as expectancy violations. What was the effect of the 2-week response latency and of silence on the other dependent variables? For most of the variables, the effect was negative: evaluation, the three relational message interpretations, and credibility dropped significantly as a result of online silence. This in line with Hypothesis 1 and reflects the fact that online silence is linked more with negative consequences than with positive or neutral ones. Nevertheless, this finding is not self-evident, and there are contrary examples. One example is the work of Sheldon et al. (2006) described earlier, which explored an e-mail chronemic expectancy violation that was interpreted as a *positively* valenced violation when performed by a high-reward individual. Another example, from our results, is the impact of the expectancy violations on the attraction variables. Task attraction was not significantly decreased as a result of online silence. Although at first this seems surprising, it is in line with what we know about online silence in the workplace. The problems associated with online silence have less to do with the actual immediate disruption of the work and much more with the problem of *interpreting* online silence (Cramton, 2001), with the frustration that arises when there is no quick *explanation* for a coworker's silence, with the harsh *interpretations* of silence, and with the potential of such silences to escalate the deterioration of online relationships (Panteli & Fineman, 2005). This perspective also explains the results of the social attraction variable. The social attraction of an applicant who responded after 2 weeks

Table 3. Main Effect Means of Response Latency, by Reward Valence (*N* = 55)

	1 day	SD	2 weeks	SD	Never	SD
High-reward valence						
Expectedness	5.39	1.21	3.47*	1.01	3.31*	1.53
Evaluation	5.27	1.17	3.81*	1.44	3.44*	1.05
Social attraction	5.00	1.19	3.12*	1.37	4.22	0.83
Task attraction	5.37	1.12	4.32	1.53	4.60	0.73
Immediacy/affection	5.30	1.11	3.71*	1.85	3.85*	1.02
Similarity/depth	5.07	0.97	4.04	1.44	3.35*	1.08
Receptivity/trust	5.35	0.87	4.23*	1.33	4.00*	0.95
Credibility	5.41	0.98	4.06*	1.30	4.30*	0.45
Low-reward valence						
Expectedness	3.53	1.01	3.87	1.17	3.23	1.06
Evaluation	3.41	1.48	3.37	1.30	2.83	0.89
Social attraction	2.21	1.14	2.58	1.18	2.56	0.81
Task attraction	3.26	1.11	3.10	1.29	2.94	0.80
Immediacy/affection	4.50	1.01	4.25	1.44	3.14*	1.08
Similarity/depth	5.42	0.64	4.37	1.54	2.64*	1.11
Receptivity/trust	4.93	1.09	4.80	1.05	3.37*	1.25
Credibility	4.19	0.94	3.88	1.17	3.55	1.03

Note: *p* values significantly different from mean for 1-day latency, based on Duncan's multiple range test.
 **p* < .05.

was significantly lower than that of an applicant who responded within a day, whereas the social attraction of the applicant who did not respond at all did not drop significantly (see Figure 1). It seems like the social slight associated with an applicant who responds after 2 weeks without any explanation or justification is significant, whereas an applicant who does not respond at all creates enough ambiguity so as not to cause a significant drop in social attractiveness.

In the case of the low-reward-valence candidate, we see a very different picture. There is no significant difference between the expectedness of the three response latencies. It appears that the participants in the study did not perceive a late response or silence from a low-reward candidate to be surprising. One simple explanation is that their negative impression of the applicants lowered their expectation about the applicant overall, and thus, in accordance with EVT, the 2-week latency and the silence were not expectancy violations. The normative response within a day was also not an expectancy violation, as it was within norms. This pattern is consistent with the lack of impact of response latency on most other dependent variables: evaluation, social attraction, task attraction, and credibility.

Unlike the other dependent variables, we see a significant difference between the *never* latency and the 1-day latency on the three relational communication variables, but there is

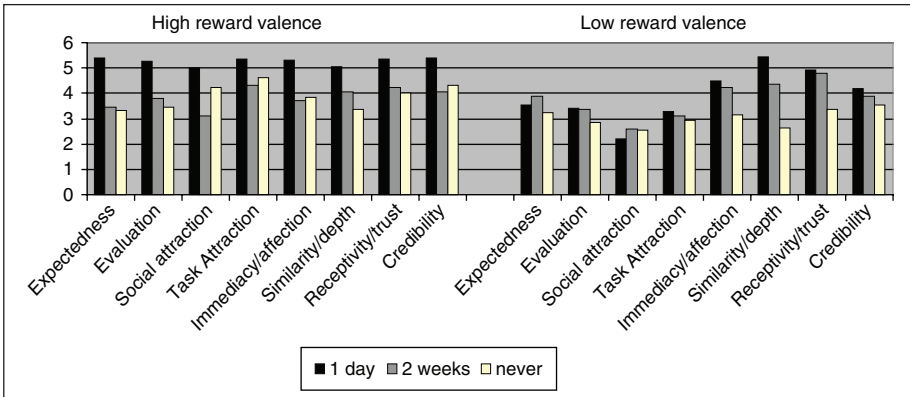


Figure 1. Means for the three response latencies—of expectedness, evaluation, two attraction variables, three relational message interpretation variables, and credibility, by candidate reward valence

no difference between the 2-week latency and the 1-day latency. This suggests that participants were relationally affected by the response latencies in the low-reward condition. Perhaps, the normative response of the low-reward target was interpreted as a positive expectancy violation in regard to the relational message variables.

In summary, the study showed that a 2-week silence followed by a response, as well as full silence, violated the study participants' expectations when they were associated with high-reward targets. The violations were, overall, interpreted as negative. The existence of an interaction lead us to look beyond the main effects and explore separately the effect of the response latencies for high-reward and for low-reward-valence candidates. For high-reward-valence candidates the long pause and the full silence were perceived as expectancy violations and led to a significantly lower evaluation of the candidate. Most other dependent variables were positively correlated with expectedness and evaluation, but with interesting exceptions such as task and social attraction. In contrast, among low-reward candidates the long pause and the full silence were not perceived as expectancy violations and did not lead to a lower evaluation of the candidate. Most other dependent variables were positively correlated with expectedness and evaluation, with the interesting exception of the relational communication variables. We suggest possible, speculative explanations for the exceptions to the overall trends but emphasize the limitation of these speculations. More than anything else, these complex effects underline the context dependency of non-verbal cues in general, and specifically, of the highly ambiguous phenomenon of silence.

The Richness of Text-Based CMC

These findings support and supplement the findings of Walther and Tidwell (1995) and of Sheldon et al. (2006) that chronemic cues are important nonverbal cues in text-based

CMC. This support contributes to the discussion of the richness of CMC and whether CMC is a poor substitute to traditional communication channels or whether it is an alternative to traditional communication channels the unique affordances of which make it neither superior nor inferior to traditional communication (for a review see Walther & Parks, 2002). The findings reported here support the latter assertion by adding to the accumulating evidence that text-based CMC is able to convey nonverbal cues (Walther, 2006) and that these cues interact with communicator attributes.

Implications for EVT

EVT provided the general framework for this study, and both the main effects and the interactions observed are consistent with the theory: People hold expectancies about response latencies in e-mail communication, and these expectations are both predictive and prescriptive. They are predictive in the sense of reflecting typical behavior as it is measured in the field, and they are prescriptive in the sense of reflecting what is appropriate: Users expect people to respond to e-mail queries, and they expect the response to be within the normative zones. Expectancies and evaluations are closely correlated. EVT also predicted the importance of candidate reward valence and its interaction with the violation. The interaction is complex: For the high-reward candidate, long pauses and silence had a negative impact on the impression of the candidate, and in the case of the low-reward candidate, the various dependent variables were affected differently. These findings extend the application of EVT to online communication by Sheldon et al. (2006): It goes beyond long pauses and explores online silence, it employs dependent measures that have been developed and used extensively in the EVT literature, and it shows the existence of chromemic expectancies in the population. The findings enrich EVT in confirming violator reward valence as a key parameter that interacts with expectancy violations.

Limitations

Several limitations of the study are worth noting. These limitations are related to the convenience sample used in the study, to the vignette methodology, and to challenges related to exploring the nature and consequences of a nonevent such as silence.

Participants were drawn from a class of part-time MBA students. The group was relatively heterogeneous, with diverse backgrounds and life experiences, and a wide age range. However, it is still a convenience sample of one segment of the population, and further research should explore additional segments of the e-mail using public.

The vignette methodology is limited. It offers a noise-free background against which to test hypotheses and modify variables as well as an efficient alternative to lengthy experiments. It is a tool that is often used in EVT-related research, in relation to both traditional communication and online chronemics. Nevertheless, the vignette requires participants to imagine their behavior under a given situation. Their real behavior might differ. For example, individuals who undergo social exclusion experience the passage of time as slower

(Twenge, Catanese, & Baumeister, 2003). Such an effect could not be reproduced in individuals reading a vignette about online silence.

The vignette versions that had the *never* latency included less information about the candidate (one less e-mail) than the other versions. No manipulation check was designed to assess the impact of this added information. We have no reason to assume this had a major impact on study outcomes, as in many cases the evaluations of the *never* latency and 2-week latency (which did include that extra e-mail) were not significantly different.

The vignette described a single, clearly defined relationship: a job applicant and a potential recruiter. This was an appropriate vignette for a group of part-time MBA students who are managers. Nevertheless, generalization from this specific example to other relational hierarchies, circumstances, and contexts remains to be seen. If anything, this study provides more evidence for the complexity and the sensitivity to seemingly minor details of human nonverbal communication. The fact that reward valence interacted with response latency in a very different manner in this study than the manner of interaction observed in the study by Sheldon et al. (2006) reminds us of the care that is required when extrapolating from one specific context to others.

Future Directions

Having demonstrated that online response latencies are sometimes expectancy violations, a whole set of questions related to online silence becomes amenable to exploration. For example, what are the consequences of response latencies in the interim zone between 1 day and 2 weeks? What are the consequences of unexpectedly short response latencies? How do factors such as apologies for a delayed response, time of day, organizational power relationships, and culture interact with the dependent variables?

Conclusion

In this study we examined online response latencies and silence as chronemic expectancy violations. Our results confirm that users of e-mail are sensitive to response latencies, are aware of response latency norms, have expectations about response latencies, and, in the case of high-reward targets, perceive silence as a violation of these expectations. Using this approach, we show that users incorporate response latencies and silence as cues when assessing others. Online silence, like traditional silence, is complex and highly context dependent. The findings exemplify how written CMC can convey subtle nonverbal cues.

Appendix

Following is a description of the vignette, based on a literal translation of the original Hebrew vignettes. The vignette was pilot tested on several native Hebrew speakers and reflects a typical "business casual" linguistic style.

The e-mail texts were presented in a different font type and within a thin frame that delineated the text.

(continued)

Appendix (continued)

The vignette described to the participants a sequence of events in which the participants are asked to assess a candidate whose name is Rafi (a typical male Israeli name) for the position of sales team leader. They are told the candidate sent an application e-mail. The text of the e-mail was presented verbatim:

Hello,

I wish to apply for the advertised position of sales manager. I have over 6 years of sales experience, and believe that my qualifications meet the advertised requirements.

Then the participants were told that the candidate was subsequently interviewed by them at the company's offices.

Rafi is a 29-year-old salesperson. You were very [un]impressed by his presentation and his professionalism. It seems to you that his sales experience is exactly that [not the experience] required for the job. Personally, you felt very [un]comfortable with him.

Material in square brackets describes the low-reward-valence version of the vignette.

Following that, the participants were informed that they realized that their interview notes contained something unclear. Consequently, they sent Rafi the following e-mail (provided verbatim):

Hello Rafi,

Thanks for your visit at our offices. I reviewed my interview notes and realized that something is not clear to me. Was your 2002-2004 position purely a sales position, or did you also have some managerial responsibility?

Then they were told they either received the following response from Rafi after 1 day/2 weeks or a month has passed and they received no response from Rafi.

Hello,

It was a pleasure meeting you. I certainly hope to come and work in your organization! I was very impressed by the positive atmosphere in the office, and feel that I will be able to easily fit in.

As for your question, my role in 2002-2004 was pivotal to the company, and required a high level of responsibility, but it was purely a sales position, with no managerial responsibility.

Following this part, the participants were asked to respond to the questions. Participants were allowed to review the vignette details as they responded.

Acknowledgment

We wish to thank Dr. Joe Walther for an inspiring and fruitful discussion of response latencies in CMC and for the suggestion to apply EVT to study online response latencies.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

References

- Bruneau, T. J. (1973). Communicative silences: Forms and functions. *The Journal of Communication*, 23, 17-46.
- Burgoon, J. K., & Hale, J. L. (1987). Validation and measurement of the fundamental themes of relational communication. *Communication Monographs*, 54, 19-41.
- Burgoon, J. K., & Hale, J. L. (1988). Nonverbal expectancy violations: Model elaboration and application to immediacy behaviors. *Communication Monographs*, 55, 58-79.
- Burgoon, J. K., Manusov, V., Mineo, P., & Hale, J. L. (1985). Effects of gaze on hiring, credibility, attraction and relational message interpretation. *Journal of Nonverbal Behavior*, 9, 133-146.
- Burgoon, J. K., & Walther, J. B. (1990). Nonverbal expectancies and the evaluative consequences of violations. *Human Communication Research*, 17, 232-265.
- Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, 12, 346-371.
- Dabbish, L. A., Kraut, R. E., Fussell, S., & Kiesler, S. (2005). Understanding email use: Predicting action on a message. *Proceedings of the SIGCHI conference on human factors in computing systems*, 691-700.
- Finch, J. (1987). The vignette technique in survey research. *Sociology*, 21, 105-114.
- Hesse, B. W., Werner, C. M., & Altman, I. (1988). Temporal aspects of computer-mediated communication. *Computers in Human Behavior*, 4, 147-165.
- Hiltz, S. R., Johnson, K., & Turoff, M. (1986). Experiments in group decision making: Communication process and outcome in face-to-face versus computerized conferences. *Human Communication Research*, 13, 225-252.
- Jaworski, A. (1999). The power of silence in communication. In L. K. Guerrero, J. A. DeVito, & M. L. Hecht (Eds.), *The nonverbal communication reader* (pp. 156-162). Prospect Heights, IL: Waveland Press.
- Kalman, Y. M., Ravid, G., Raban, D. R., & Rafaeli, S. (2006). Pauses and response latencies: A chronemic analysis of asynchronous CMC. *Journal of Computer Mediated Communication*, 12, 1-23.
- McCroskey, J. C., & McCain, T. A. (1974). The measurement of interpersonal attraction. *Speech Monographs*, 41, 261-266.
- McCroskey, J. C., & Young, T. J. (1981). Ethos and credibility: The construct and its measurement after three decades. *Central States Speech Journal*, 32, 24-34.

- McLaughlin, M. L., & Cody, M. J. (1982). Awkward silences: Behavioral antecedents and consequences of the conversational lapse. *Human Communication Research*, 8, 299-316.
- Panteli, N., & Fineman, S. (2005). The sound of silence: The case of virtual team organising. *Behaviour & Information Technology*, 24, 347-352.
- Sheldon, O. J., Thomas-Hunt, M. C., & Proell, C. A. (2006). When timeliness matters: The effect of status on reactions to perceived time delay within distributed collaboration. *Journal of Applied Psychology*, 91, 1385-1395.
- Tannen, D. (1985). Silence: Anything but. In *Perspectives on silence* (pp. 93-111). Westport, CT: Greenwood.
- Tannen, D., & Saville-Troike, M. (1985). *Perspectives on silence*. Westport, CT: Greenwood.
- Twenge, J. M., Catanese, K. R., & Baumeister, R. F. (2003). Social exclusion and the deconstructed state: Time perception, meaninglessness, lethargy, lack of emotion, and self-awareness. *Journal of Personality and Social Psychology*, 85, 409-423.
- Tyler, J. R., & Tang, J. C. (2003, September). *When can I expect an email response? A study of rhythms in email usage*. Paper presented at the ECSCW 2003, Helsinki, Finland.
- Walther, J. B. (2002). Time effects in computer-mediated groups: Past, present, and future. In P. Hinds & S. Kiesler (Eds.), *Distributed work* (pp. 235-257). Cambridge: The MIT Press.
- Walther, J. B. (2006). Nonverbal dynamics in computer-mediated communication or :(and the Net :('s with you, :) and you :) alone. In V. Manusov & M. L. Patterson (Eds.), *The Sage handbook of nonverbal communication* (pp. 461-479). Thousand Oaks, CA: SAGE.
- Walther, J. B., Anderson, J. F., & Park, D. (1994). Interpersonal effects in computer-mediated interaction: A meta-analysis of social and antisocial communication. *Communication Research*, 21, 460-487.
- Walther, J. B., & Parks, M. R. (2002). Cues filtered out, cues filtered in. In M. Knapp & J. Daly (Eds.), *Handbook of interpersonal communication* (pp. 529-563). Thousand Oaks, CA: SAGE.
- Walther, J. B., & Tidwell, L. C. (1995). Nonverbal cues in computer-mediated communication, and the effect of chronemics on relational communication. *Journal of Organizational Computing*, 5, 355-378.
- Watzlawick, P., Beavin, J. H., & Jackson, D. D. (1967). *Pragmatics of human communication. A study of interactional patterns, pathologies and paradoxes*. New York: Norton.

Bios

Yoram M. Kalman (PhD, University of Haifa) is a researcher at the Department of Management and Economics, the Open University of Israel. He researches the impact of digital technologies on individuals, organizations, and society. His 2007 PhD dissertation focused on silence in online communication.

Sheizaf Rafaeli (PhD, Stanford University) is director of the Sagy Center for Internet Research, and head of the Graduate School of Management, University of Haifa. He also leads the "Games for Executives" Serious Games and Simulations project. His research interests are in computers as media.