Worth the Wait?: The Effect of Responsiveness on Interpersonal Attraction Among Known Acquaintances

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Abstract. As users adopt new communication technologies, they also develop new norms and expectations about responsiveness: the time it takes an interaction partner to respond to a message. Prior work suggests violation of responsiveness expectations can lead to negative evaluations, but this has not been studied within the modern communication ecosystem, where ubiquitous mobile devices and connectivity enable constant contact with friends and colleagues. We present results from a lab-based experiment examining how violation of such expectations can affect interpersonal attraction. In studying pairs of known acquaintances, we find that low-responsive partners are rated lower in social attraction than high-responsive partners. We also provide an exploratory analysis of chat logs from the experiment which indicates that responsiveness behavior is part of an interactive process where parties involved negotiate for each other's attention over time.

Keywords: responsiveness, interpersonal communication, messaging

1 Introduction

More than ever before, people use a wide range of communication media to facilitate nearly continuous contact with others [26]. These include mobile-specific media such as texting (SMS) [30], as well as platforms like Facebook Messenger, Google Hangouts, and iMessage, which can be used seamlessly across many devices [2]. This capacity for communication across many contexts and devices can make people feel they are constantly online [22]. For those who communicate regularly, this can mean people develop an "ambient" awareness of how and when to talk to others, and have adopted a variety of strategies to signal their own availability as well as assess the availability of their contacts [37].

Moreover, this capacity for constant connection with others has arguably changed people's expectations in communication relative to a time when much mediated communication was available only on desktop computers. For example, people often expect their contacts to be online and available to respond to messages more or less constantly [27]. Expectations around responsiveness can affect our impressions of others in text-based interaction. Kalman and Rafaeli [18], for

example, showed how job candidates' delayed response to email led some managers to view the candidates as unprofessional. This finding provides a useful starting point for considering how responsiveness can impact impressions of others in online interaction. In particular, Expectancy Violation Theory (EVT) [6] allows us to consider how users develop expectations around responsiveness and how violations of these expectations can have relational consequences. This has important implications for the design of communication platforms, as designers of these systems may wish to understand how different features can change expectations, and therefore can affect interpersonal relationships in different ways.

Questions about the effects of responsiveness are particularly salient now due to the constant contact and near-instant response people often expect using today's communication media in both work and social settings. As researchers attempt to exploit contextual information to better design for pervasive computing [25, 28], it is important to empirically evaluate how cues such as response time are interpreted and can affect our impressions of one another. Empirical work in this area has tended to focus primarily on response in work communication contexts. While this has important implications, we argue that responsiveness can have consequences in social contexts as well. For example, while we know that failure to respond to workplace emails can affect perception of workers, we know less about how failure to respond to a text message can affect perception of a close friend. In particular, failure to respond could cause frustration or potentially affect friends' desire to be around each other and remain friends, also known as interpersonal attraction [24]. Some researchers have begun to propose novel methods to seem attentive to others' responsiveness needs in messaging platforms, such as using machine learning to predict the likely time frame for response [13, 27], but this work has not considered the potential relational consequences of response time and other social nuances. If, for example, expectation violations are found to decrease positive feelings among close friends, we may need to think carefully about how we display predicted response times that can affect expectation formation. More empirical work is needed to understand how expectations around responsiveness form and what their effects are.

While expectancy violation theory allows us to gain insights on how a message sender evaluates a partner based on the timeliness of a response to their message, this perspective does not fully capture the interactive dynamics of the situation. As people are often in contact with many others and may also be engaged in face-to-face conversations or other activities, any given incoming message can be seen as one item among many that are competing for the receivers finite and scarce attention [1, 3]. It then becomes important to consider what strategies people use to attract attention when faced with an unresponsive partner. Some recent work [37] has conceptualized attention management as a negotiation process analogous to the grounding process described by Clark [8]. Viewing responsiveness as part of a joint attention management process allows us to begin to explore the dynamics of responsiveness and attention. Furthermore, understanding this process can guide the design of systems that attempt

to predict responsive time or attentiveness [1, 13, 27] by providing insight into how responsiveness behavior changes during an interaction.

In this paper we present results from a lab experiment designed to explore the relationship between responsiveness and interpersonal attraction between known acquaintances. By manipulating responsiveness in online interaction, we found evidence that delayed responsiveness is associated with lower levels of social attraction, the feeling of friendship and wanting to spend time with another person. In addition to these results, we present a qualitative analysis of chat logs to understand how individuals negotiate for attention when faced with delayed responsiveness.

2 Background

2.1 Responsiveness and Impressions

Participants in text-based interaction often interpret cues such as word choice [16] or emoticons [11, 21] in forming impressions of others [35]. These cues can affect relational outcomes such as trust and liking between communication partners [23, 29, 32, 36]. It has also been shown that chronemics, or the use of time, in online conversation can be interpreted as a cue that reveals social information [19]. Response time has been shown to affect impressions of others, as in Tyler and Tang's [33] finding that workers have expectations about appropriate email response times and that workers have anxiety about when to expect a response from new contacts. Delay in response has also been identified as a serious problem for geographically dispersed virtual teams, as workers often misinterpret the meaning of silence [10].

It is clear that, like explicit cues such as word choice and emoticon use, responsiveness can affect our impressions of others. However, as the studies above demonstrate, the effect of responsiveness on impressions has primarily focused on either email or instant messaging in the workplace. As people increasingly use messaging platforms such as Facebook Messenger and Google Hangouts to communicate with friends [2] and develop expectations for immediate response at virtually all times [27], we need to understand how responsiveness can affect perceptions among known acquaintances and account for these expectations when designing communication platforms for their use.

We know that participants in online interaction interpret various cues in forming impressions of others [15, 23]. We also know that response time can be interpreted in forming impressions of others and have evidence that delayed responsiveness can lead to negative impressions in the workplace [10, 18]. Given that friends and acquaintances increasingly use text-based platforms to communicate with one another [2, 22, 30] we would expect them to also interpret response time in evaluating others, and we would expect them to evaluate the same types of partner attributes as they do when interpreting other cues, such as liking, warmth, and trustworthiness [20, 29, 32]. A good overall measure to capture these attributes is interpersonal attraction: judgments about how much

a person likes someone else [24], it is useful to think about responsiveness in terms of the message sender's expectation, and how violation of this expectation can lead to changes in evaluation of others.

Responsiveness and expectations A useful theoretical framework for exploring these questions is Expectancy Violation Theory (EVT) [6], which suggests that violation of an expectation results in heightened attention to the behavior, which is then interpreted and evaluated. In our case, we assume people expect a quick response and that delayed response violates that expectation which may lead to a negative evaluation. In this paper, one of our goals is to understand how expectations of responsiveness are affected by behavior, i.e., if delayed responsiveness causes changes in expectations, and whether or not this has an effect on impressions of others. Doing so will allow us to better understand the effects of the "always on" nature of modern communication platforms on relationships. Below, we use EVT to derive a series of hypotheses we test in a lab experiment. While previous studies applying EVT have focused on the moderating effect of communicator reward valence in EVT, this is often applied when forming impressions of strangers [18]. Given that our participants already knew each other, our hypotheses focus on the other elements of EVT, namely the formation of expectations and the valence and magnitude of expectancy violations.

Hypotheses EVT suggests that the outcome of a violation depends in part on the magnitude of deviation from an expectation. The theory also suggests that violations are psychologically arousing, or in other words, a violation draws attention to itself. Given that we are focusing on responsiveness among known acquaintances, we expect that these individuals have some pre-existing expectations about responsiveness. In order for a response delay to have an effect on interpersonal attraction, the expectation violation must be perceptible and cross some threshold such that it is psychologically arousing. While we expect known acquaintances to have general expectations about each others response behavior that may not change as the result of one interaction, we also know that individuals form context specific expectations within an interaction [5]. We therefore also expect them to make contextual adjustments to their expectations within a particular conversation. A useful way to know whether or not a violation occurred, then, is to assess someones expectations immediately following an episode. We expect that communicators adjust their expectations following a violation, such that when a delayed response is sufficiently long to attract attention as considered a violation, an individual will set a lower bar for expectations about responsiveness and expect longer delays. We refer to individuals with longer delays as "low-responsive" and individuals who respond quickly as "high-responsive."

H1: Individuals will have lower responsiveness expectations for a low-responsive partner than for a high-responsive partner.

Violations of these responsiveness expectations should draw attention and evaluation. To assess impressions, we focus on attraction as a multifactor construct as defined by McCroskey and McCain [24]. In particular, we study the

effect of responsiveness on both social attraction, the feeling of friendship and wanting to spend time with another person, as well as task attraction, or respect for another person and belief in their ability to complete tasks. We expect slow response to lead to a decrease in both social and task attraction.

H2a: Low-responsive partners will be rated lower in social attraction.

H2b: Low-responsive partners will be rated lower in task attraction.

A violation occurs only when a threshold is crossed such that the violating behavior leads to psychological arousal. In the case where an individual is unable to respond quickly, he may be distracted from the conversation such that he does not notice delayed responsiveness from his partner. In this case, we would not expect a change in expectations following an interaction, because attention to the violating behavior was not heightened. In other words, an individual's own ability to respond will affect their expectations of responsiveness.

H3: Low-responsive and high-responsive individuals will have different expectations of their partners.

Furthermore, we would expect that, because violations will be less frequent for people with lower expectations, those with lower expectations will be less likely to form negative impressions of their low-responsive partners:

H4: Compared to low-responsive individuals, high-responsive individuals will have a larger decrease in attraction towards low-responsive partners.

2.2   Responsiveness and Attention

Studies of workplace email use have shown workers adapt to others' expectations of quick responses to email by using a variety of strategies, such as sending short messages signaling their intent to reply more thoroughly later [4, 33]. Such practices suggest that responsiveness is one part of a process in which people strategically manage their attention through negotiation over time. This is to say, in the examples cited above there is a normative expectation to respond quickly which may interfere with the ability to focus on the task at hand, leading individuals to respond quickly but in such a way as to manage expectations about a longer, in-depth response.

This perspective has been adopted in some recent studies of attention management. For example, Wohn and Birnholtz [37] found that mobile device users develop various strategies to both display their own availability for interaction and assess the availability of others. Drawing on Clark's [8] grounding process, this perspective emphasizes that individuals in an interaction adjust their behavior based on evidence of each others mutual attention (or lack thereof). Responsiveness can be viewed as one type of evidence of attention, and likely has an effect on how participants in a conversation interact with one another.

With regard to responsiveness, this perspective raises questions about how people attempt to get attention from a partner who is not responding. We therefore asked the following research question:

RQ1: What strategies are used by individuals seeking higher attention from their conversation partners?

3 Method

We ran a between-participants lab experiment in which pairs of participants located in separate rooms completed a task together that required coordination via text chat. Pairs were randomly assigned to one of three conditions, in which individuals responsiveness was manipulated via the presence of a separate distractor task that slowed response: 1) high-responsive/high-responsive (i.e., no distractor for either partner), 2) high-responsive/low-responsive (distractor task for only one participant) and 3) low-responsive/low-responsive (distractor task for both). Since our analysis treats individual condition and partner condition as main effects, in order to have a balanced design, we doubled the number of participants assigned to condition 2 (i.e., to account for both low/high and high/low).

3.1 Participants

Participants included 48 undergraduate students (24 pairs) from a Midwestern U.S. university (age 18-26). Participants were recruited in pairs, and required to have known each other for at least three months. Fifty-four percent of pairs were female-female (40% mixed, 6% male-male). Recruitment was done via flyering on campus, social media posts, and in-class announcements. Participants were guaranteed $5 for participation, with a possible $3 bonus that incentivized different behaviors across conditions.

3.2 Task

Collaborative Task The collaborative task assigned to all pairs was a "desert island" task (derived from Gottman [14]), in which the pair reads a scenario about being stranded on a desert island. They are given a list of many available items (e.g., first aid kit, matches, compass) and are told that they both must decide on the top 5 most important items for their survival. Each individual had to first construct their own list of the top 5 items to submit using a web-based tool, which also included a chat interface to coordinate with their partner. This type of task is commonly used in studies of this nature (e.g., [31]) and is appropriate here in that it replicates real-world scenarios in which people use text to coordinate in an environment with competing priorities [3].

We used a point system to incentivize participants to complete their respective tasks and manipulate their priorities. Each person could earn a total of 300 points, resulting in up to $3.00 extra compensation. Low-responsive participants earned 50 points for completing the collaborative task, while high-responsive participants earned 150.

We encouraged participants to discuss their choices carefully by telling them (falsely) that a survival expert had compiled a list of the "correct" top 5 items. High-responsive participants were told they could earn an additional 150 points for matching this list, and low-responsive participants were told they could earn an additional 50 points. As there was no actual "correct" list, participants always earned these points as long as they both submitted identical lists.

Distractor Task As mentioned earlier, responsiveness was manipulated through a distractor task consisting of a series of web-based jigsaw puzzles. Focus on these puzzles was motivated by the possibility of 50 points per completed puzzle. To ensure that the tasks were done at the same time (such that the distractor would impact response time), each puzzle expired after 2 minutes. After each puzzle was completed, there was also a 10 second break before the next puzzle appeared, providing time to respond to their partner without having another puzzle to focus on.

3.3 Procedure

Participants arrived at the lab together and were seated in separate experiment rooms, intended to simulate separate locations. After consenting, participants filled out a questionnaire containing demographic questions, as well as items related to their initial attraction to their partner and their expectations about their partner's responsiveness.

Next, participants completed the tasks described above. They were given up to 8 minutes to complete their tasks, with no late completions accepted. This time limit is based on pilot studies showing this was enough time to complete the tasks with a sense of urgency. Finally, participants again rated their partner's attractiveness and responsiveness.

3.4 Measures

Responsiveness expectation was measured with a 5-point, 3-item scale asking whether or not they expected their partner to respond in a timely manner (α = .71). High values indicate expecting a person to be attentive and respond quickly.

Task attraction (α = .79) and social attraction (α = .79) were measured using 5-point, 10-item scales from McCroskey and McCain [24].

Responsiveness was measured as the number of seconds it took for an individual to respond to the first in a set of messages from their partner. This means that if an individual began a conversation, "Hey," and after several seconds said, "You there?," before their partner responded, we counted the number of seconds between the initial message ("Hey") and the response.

Completion time was measured as the number of seconds it took from beginning the task to both partners submitting their lists for the collaborative task.

3.5 Analysis

Responsiveness and Attraction To verify that our manipulation worked, individual mean response times were calculated and compared using a one-tailed t-test. On average, low-responsive participants took 10 seconds longer to respond than high-responsiveness participants (M = 24.5 seconds, SD = 13.3 seconds vs

M = 14.6 seconds, SD = 5.2 seconds), a statistically significant difference ($t(46)$ = 3.37, p < .01).

To test for differences in responsiveness expectations and attraction, we fit three separate mixed-effect linear models, with responsiveness expectations, task attraction, and social attraction as the dependent variables. Given that our design involved pre- and post-task data, we used post-task values as the dependent variable while including pre-task values as a covariate [12]. The DV can be interpreted as post-task values that control for pre-task values.

To test our hypotheses, each model follows a 2x2 factorial analysis, in which we include the following independent variables: individual condition (high-responsive vs. low-responsive), partner condition (high-responsive vs. low-responsive) and an interaction term for these two variables (to test H3 and H4). To account for interdependence between observations, pair is included as a random effect in the model. We used an alpha level of .05 for all statistical tests.

Responsiveness and Attention Negotiation In order to understand different strategies taken to negotiate attention across conditions, the author and two research assistants carefully read through chat logs of all participants across conditions, which includes messages sent as well as timestamps. These analyses were guided by turn-taking strategies in conversation analysis [17] with special attention paid to situations in which participants seemed to react to delayed responsiveness and get their partners attention. Each researcher made detailed notes on their transcripts and themes were identified through discussion among the researchers.

4 Results

4.1 Differences in Expectations

H1 predicted individuals will have lower expectations about responsiveness after interacting with a low-responsive partner. The data support *H1*. Partner condition did have a significant effect on expectations of responsiveness ($F(1,42.72)$ = 4.72, p < .05), and those with low-responsive partners did have lower responsiveness expectations. In comparing the least-squares means across partner conditions, we found the average expectations score among those with high-responsive partners (M = 3.49, SE = 0.08) to be higher than those with low-responsive partners (M = 3.23, SE = 0.08). A higher score on this scale indicates that a participant felt his partner was attentive and responded in a timely manner.

We found no significant effect of an individual's own responsiveness condition ($F(1, 39.37)$ = 0.02, p = 0.88), or the interaction term ($F(1, 21.98)$ = 0.30, p = .59).

4.2 Differences in Attraction

Given support for *H1*, it seems that individuals did notice response latency in forming their expectations, and we can now turn to the question of whether or

not this leads to changes in attraction. We found evidence for *H2a*, which predicted lower social attraction for low-responsive partners. We did not, however, find evidence for *H2b*, which predicted a change in task attraction.

As predicted by *H2a*, partner responsiveness condition was found to have a significant effect on social attraction ($F(1,43) = 5.18$, $p < .05$), and social attraction was higher for responsive partners ($M = 4.13$, $SE = 0.06$) than those with delayed responsiveness ($M = 3.95$, $SE = 0.06$). Consistent with the results for H1, the effect of an individuals own responsiveness condition ($F(1,43) = 0.26$, $p = .61$) and the interaction term ($F(1,43) = 0.00$, $p= .99$) were not statistically significant.

We found no evidence for *H2b*, as no significant results were found for levels of task attraction. The effect of partner responsiveness was not significant ($F(1,43) = 2.97$, $p = .092$), and, similar to the other models, no significant results were found for an individuals responsiveness condition ($F(1,43) = 1.23$, $p =. 27$) or the interaction term ($F(1,43) = 0.98$, $p = .328$).

Given the lack of a significant interaction effect in any of our models, we did not see evidence for *H3* or *H4*. In other words, expectations of responsiveness and the effect of partner responsiveness on attraction did not vary depending on an individuals own responsiveness. These results are summarized in Figure 1.
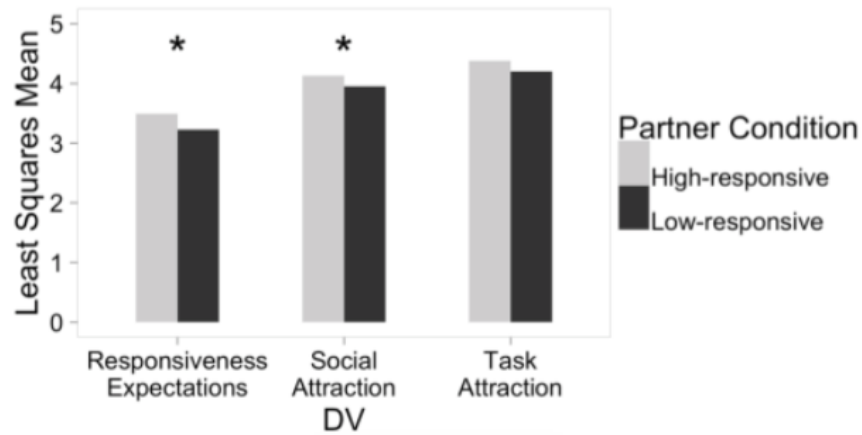

Fig. 1. Least Squares Means of DVs Across Conditions. Note: * indicates $p < .05$

4.3 Completion Time and Interaction

While we found evidence supporting our hypotheses, it is possible that this effect is due to the distractor task, which could plausibly have influenced pair performance or the amount of communication between participants. We tested for this

possibility, but found no significant effect of condition on task completion time (see Table 1), (F(2, 21) = 3.32, p = .06). We also compared the mean number of messages sent by participants in the low-responsive (M=17.67, SD=7.49) and high-responsive (M=20.92, SD=9.12) conditions but found no significant difference (t(46) = 1.34, p = .186).

4.4 Responsiveness and Attention

Our research question asked what strategies are used to heighten attention from a low-responsive partner. High-responsive participants attempting to get their partners attention did so in several ways and in varying levels of politeness.

Question asking was one way participants attempted to elicit responses from their partners. We noticed differences, however, in the types of questions asked and how they were addressed.

For example, participants sometimes asked questions about the collaborative task. This is to say, rather than directly inquire about their partner's status, participants would attempt to elicit a response by eliciting input about their joint task. One high-responsive participant, for example, after not receiving a response from their low-responsive partner to their greeting for 20 seconds, followed up by asking "which 5 r u thinking," which elicited a quick response.

In other cases questions are also used, but more directly to assess partner availability and whether or not they see the messages at all. For example, after not receiving a response to their greeting after 35 seconds, a high-responsive individual followed up with "do you see this?" and after another 57 seconds with "testing 123" which then elicited a response from their partner. Following this exchange, the low-responsive partner tended to answer subsequent questions within 15 seconds.

In one case a high-responsive partner initiated with a question related to the task ("ok deserts get cold so blankets?"), and followed up with a question about availability after not receiving a response ("you there?").

In our ANOVA models, we did not find evidence that a user's own responsiveness condition affected his expectations or evaluation of partner responsiveness. We also saw evidence in the chat logs that participants in the low-responsive condition occasionally took breaks to speak with their partner, and also used similar strategies when not receiving a response. One low-responsive participant, for example, after not receiving any response from their partner after one

Table 1. Average Completion Time Across Conditions

Responsiveness Types in Pair	Mean Completion Time (Seconds)	SD
High-high	380.5	52.4
Low-low	443.5	40.2
High-low	423.0	33.8

minute, started sending a series of question marks (e.g., "????????") to their partner, rather forcefully and explicitly attempting to elicit a response.

However, participants did not always use questions to explicitly signal the desire for a response. In some cases, participants would initiate a conversation with a greeting or other phrase they likely felt would yield a response. After enough time had elapsed that it was clear the expected turn taking would not occur, the participant would move on. After 93 seconds and no response from a low-responsive partner, one high-responsive participant followed up with "So, on my list, I have: matches, compass, water, peanuts, and pocketknife" and then with "We def don't want the soda, pretzels, or pillows."

5 Discussion

As users increasingly use communication platforms that span multiple devices and develop new expectations about availability of their contacts, it is important to understand how these new expectations affect how we communicate and how responsiveness may affect interpersonal relationships. Our results suggest that responsiveness can impact impressions among known acquaintances and that individuals use different strategies to get attention from an unresponsive partner.

5.1 Responsiveness and Impressions

Our study extends prior work such as Tyler and Tang [33] and Kalman and Rafaeli [18], which found that long delays in email response in the workplace resulted in negative evaluation of workers. Our experiment was designed to test for these effects in synchronous text-based interfaces among known acquaintances who have competing demands for their attention. We believe this experiment design closely resembles the attributes of contemporary communication platforms [2, 3]. Furthermore, while recent work has noted the new expectations about immediate response in these types of messaging platforms [7, 27], our study provides evidence of what can happen when these expectations are violated even with relatively small delays. Our finding that response time can affect social attraction has implications for the design of new communication platforms.

The main finding in our experiment was that participants who took, on average, just 10 seconds longer to respond were evaluated lower in social attraction. The fact that participants' impressions of one another could be altered by an average response delay of 10 seconds suggests that they are acutely aware of response delay when engaged in online conversation. In the context of our experiment, message senders were aware that they had limited time to complete a task that they needed their partner's attention to complete. This suggests that in some scenarios communicators have contextual expectations about partner responsiveness, and from an EVT perspective, deviation from such contextual expectations will trigger psychological arousal and negative evaluations. While recent work has explored contextual information in notification management [25,

28], our results indicate system designers should also be aware of how implementation of such features affect response time, as this can affect relationships.

Importantly, we note that, as Figure 1 shows, social attraction ratings across all partner conditions were still high, even when they varied: close to 4 on a 5-point Likert scale. Nevertheless, the effect seems important given that the pairs we recruited were people who had an existing relationship. Given that we were able to see a difference in social attraction among friends, this finding raises questions about how such effects may play out over a longer period of time and across different types of relationships.

As participants worked on a collaborative task during the experiment, it is interesting that while we saw a significant difference in social attraction, we did not find a significant difference in task attraction. It is possible that since we recruited friends, who likely had a primarily social relationship, these pairs may not have had much experience working together which could result in a larger amount of variance in evaluating each other's task attractiveness. This suggests that type of relationship may be important to consider in thinking about responsiveness and its effects.

Also of interest is the lack of evidence we found for Hypotheses 3 and 4, which suggested that the effect of lower expectations and lower attraction would be moderated by an individual's own responsiveness condition. In particular, we assumed that individuals in the low-responsive condition would fail to notice their partners response latency, and therefore not change their expectations or their attraction towards their partner. We did not find evidence that this was the case. One possible explanation for this may be the fundamental attribution error, in which people attribute behavior of others to internal characteristics and attribute their own behavior to external characteristics. In other words, a participant may be more likely to rationalize his own failure to respond immediately by noticing the competing demands for his attention, while simultaneously blaming his partner's slow response time on some personal characteristic of his partner. Such attribution errors have previously been noted in text-based interaction [9, 34]. While we cannot be certain why partner attraction ratings did not vary depending on an individual's condition, this question merits further research, as it suggests that an individuals own ability to respond is not necessarily a reliable indicator of his expectations of others' responsiveness. If attribution errors do drive such behavior, this may have important implications for the design of systems that attempt to predict responsiveness [1, 13, 27], as we must think carefully about how users will interpret such predictions.

5.2 Responsiveness and Attention

Our chat log analysis helps us further understand responsiveness as one part of a joint process between actors in negotiating attention. This negotiation process also has important implications as we consider how communication is changing with new media platforms. Individuals may choose not to respond to chat requests when they have another task to focus on [1], and even if they do want

to respond in a conversation, their attention is likely divided as users split their attention across many different conversations occurring at the same time [3].

We saw evidence that people react to delayed response in various ways when heightened attention is needed from a partner. Users of messaging platforms are often strategic when they have an urgent message to communicate, for example by switching to a more synchronous medium in attempting to contact someone [37]. Our chat logs indicate that users also rely on different types of linguistic strategies in obtaining partner attention when limited to a text-based messaging platform. These may include explicit strategies of asking about availability ("are you there?") or other indicators of frustration at lack of response (simply typing "???" over and over). However, they also include other strategies such as simply moving forward in a conversation, as we saw with the participant who shared his desert island list after not receiving a response to his greeting for 93 seconds.

Recent work has explored systems that predict when a user is available [1, 28]. Our chat log analysis indicates that, in some cases, users who are distracted or otherwise busy may still alter their responsiveness behavior in response to different types of strategies used by those seeking their attention. If this is the case, predictive systems may want to categorize message recipients not in categories of available or not available, but rather more broadly consider attention as existing on a spectrum and offering various levels of attention seeking behavior.

6   Limitations and Future Work

We attempted to design for ecological validity by choosing tasks that mimicked the competing attention demands in the real world. However, as with any lab experiment, our study necessarily made tradeoffs between experimental control and external validity. We believe this study provides the basis for interesting avenues of future research.

We found that users adjusted their expectations of responsiveness as a result of partner response time after a brief 8 minute interaction. Observational studies of existing messaging logs or longitudinal study designs could help us better understand patterns of responsiveness as they play out across the multitude of new communication platforms and how expectations about responsiveness shift over an extended period of time. While our lab study showed a difference in social attraction based on responsiveness, such studies could provide further evidence on how relational variables are affected by responsiveness over time.

Mobile devices no doubt play an important part in new communication media. Many of the services used on these devices also extends to laptop or desktop use, contributing to the pervasive nature of many of these platforms. Our lab study relied on participants using desktop computers in our lab allowing for greater experimental control. Nevertheless, future work should study these dynamics on mobile devices as well.

7   Conclusion

We have presented results from a lab experiment designed to understand the effect of responsiveness on attraction among known acquaintances as well as a qualitative analysis of chat logs to understand how individuals strategically attempt to get attention from an unresponsive partner. Our experimental results indicate that individuals who are slower to respond are rated lower in social attraction. Our analysis of chat logs showed that individuals use different strategies to get attention from an unresponsive partner, including asking questions about their partners availability as well as skipping their partners turn in conversation. These results indicate the importance of understanding responsiveness behavior and its effects in new communication platforms where people are constantly online and expect their contacts to be online and available to respond.

8   Acknowledgements

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