Fast response times signal social connection in conversation

Emma M. Templeton[a,1], Luke J. Chang[a], Elizabeth A. Reynolds[a], Marie D. Cone LeBeaumont[a], and Thalia Wheatley[a,b]

[a]Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH 03755; and [b]Santa Fe Institute, Santa Fe, NM 87501

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Clicking is one of the most robust metaphors for social connection. But how do we know when two people "click"? We asked pairs of friends and strangers to talk with each other and rate their felt connection. For both friends and strangers, speed in response was a robust predictor of feeling connected. Conversations with faster response times felt more connected than conversations with slower response times, and within conversations, connected moments had faster response times than less-connected moments. This effect was determined primarily by partner responsivity: People felt more connected to the degree that their partner responded quickly to them rather than by how quickly they responded to their partner. The temporal scale of these effects (<250 ms) precludes conscious control, thus providing an honest signal of connection. Using a round-robin design in each of six closed networks, we show that faster responders evoked greater feelings of connection across partners. Finally, we demonstrate that this signal is used by third-party listeners as a heuristic of how well people are connected: Conversations with faster response times were perceived as more connected than the same conversations with slower response times. Together, these findings suggest that response times comprise a robust and sufficient signal of whether two minds "click."

conversation | social connection | response time | turn taking

Turn taking is a human universal (1–4) that develops early (5) and has deep evolutionary roots (6–10). Months before words are uttered, infants engage in a communicative back and forth that helps establish a bond with their caregivers (11, 12). Within this ecological niche, language develops, adding the exchange of semantic meaning (13, 14). In a remarkable feat of coordination, turn taking minimizes the time that one speaker stops and the other begins without sacrificing understanding (15–17). The modal conversational response time is extremely short, around 200 ms (18, 19)—three times faster than the average speed with which people can name an object (20, 21) and too rapid to rely on deliberative conscious control (22). Conversational response time is also extremely consistent across cultures and languages (2), suggesting a universal optimum that balances efficiency and comprehension.

Minimizing time between turns requires multiple layers of prediction. People need to prepare an appropriate response in advance, notice when their partner is likely to end their turn, decide when to deliver their response, and anticipate their partner's reaction (15, 23–27). Building an overarching mental model of the conversation further aids prediction, helping to anticipate not only when their partner is going to speak but where their thoughts are headed (28, 29). As such, response time conveys how well one mind predicts another, a behavioral metric of being "heard and understood" (30). As a marker of one mind understanding another, do fast response times also signal when two people feel connected?

Across three studies, we investigated whether response time provides a useful indicator of social connection in conversation. In Study 1, we leveraged a rich, naturalistic dataset to investigate the relationship between response time in real conversations to ratings of social connection at multiple levels of analysis—across and within conversations as well as individual differences. Unconstrained and naturalistic experimental contexts provide a representative design for the real conversations that we engage in every day (31). In Study 2, we determined whether these effects generalize to a different conversational context—conversations between close friends. In Study 3, we manipulated response times to investigate whether response times in conversation causally impact perceptions of social connection.

Results

Study 1: Social Connection and Response Time. In Study 1, we examined the relationship between response time and social connection across three levels of analysis: 1) across conversations, 2) within conversations, and 3) across individual participants. Participants ($n = 66$) completed 10 10-min unstructured conversations within six same-gendered round-robin groups (322 conversations in total). The majority of participants had never met each other prior to their conversation. After their conversation, participants privately rated their overall conversation enjoyment and then watched a video recording of their conversation while continuously rating how connected they felt to their partner at each moment in time. Response times were calculated by subtracting the start timestamp of a given speech turn from the end timestamp of the previous speech turn (Fig. 1).

We first tested the relationship between response time and conversation outcomes by computing the average response time in each conversation. We then related this value to participant's own reports of their enjoyment and connection within

Significance

Social connection is critical for our mental and physical health yet assessing and measuring connection has been challenging. Here, we demonstrate that a feature intrinsic to conversation itself—the speed with which people respond to each other—is a simple, robust, and sufficient metric of social connection. Strangers and friends feel more connected when their conversation partners respond quickly. Because extremely short response times (<250 ms) preclude conscious control, they provide an honest signal that even eavesdroppers use to judge how well two people "click."

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[1]To whom correspondence may be addressed. Email: emma.m.templeton.gr@dartmouth.edu.

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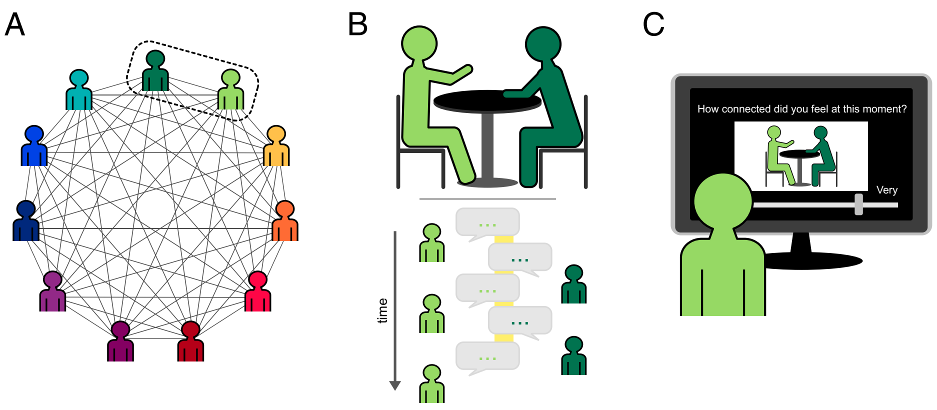

Fig. 1. Study design. (*A*) Each participant was part of an 11-person round-robin. They were scheduled to have 10 study sessions, one with every other member of the round-robin. (*B*, *Top*) Each study session began with a 10-min unstructured conversation. (*Bottom*) A representation of how response time was computed. Each speech bubble represents one speech turn. The space in-between the speech bubbles, highlighted in yellow, represents the response time. Response times are the amount of time in-between the end of one turn and the start of the next turn. (*C*) After the conversation, in separate rooms, participants completed a survey about their conversation and then watched a recording of their conversation while continuously rating how connected they felt to their study partner.

that conversation. In line with our hypothesis, we found that faster response times positively predicted reported enjoyment ($b = -0.35$, $SE = 0.05$, $P < 0.001$; Fig. 2*A*) and social connection ($b = -0.28$, $SE = 0.05$, $P < 0.001$; Fig. 2*B*).

We also hypothesized that feelings of connection would covary with response time dynamically within a conversation. To test this hypothesis, we divided each 10-min conversation into 20 30-s bins and within each bin computed the average response time and connection rating for each conversation partner based on their continuous moment-by-moment ratings. We observed a significant effect of time on connection, indicating that participants' reported connection increased over the course of their conversation ($b = 0.27$, $SE = 0.01$, $P < 0.001$). Controlling for this temporal effect, we also found that response times significantly predicted connection ratings ($b = -0.03$, $SE = 0.01$, $P = 0.002$). This effect was invariant to different bin sizes (*SI Appendix*, Fig S3).

We next investigated whether faster responders are better liked by their conversation partners. To test this, we computed each participant's average response time across all of their conversations. Similarly, for each participant, we computed the average amount of conversation enjoyment and connection their partners felt after talking with them. We then ran two linear regressions with average response time across all conversations predicting average reports of enjoyment and connection made by each participant's conversation partners. We found that participants with faster average response times evoked more enjoyment ($b = -0.64$, $SE = 0.10$, $P < 0.001$)

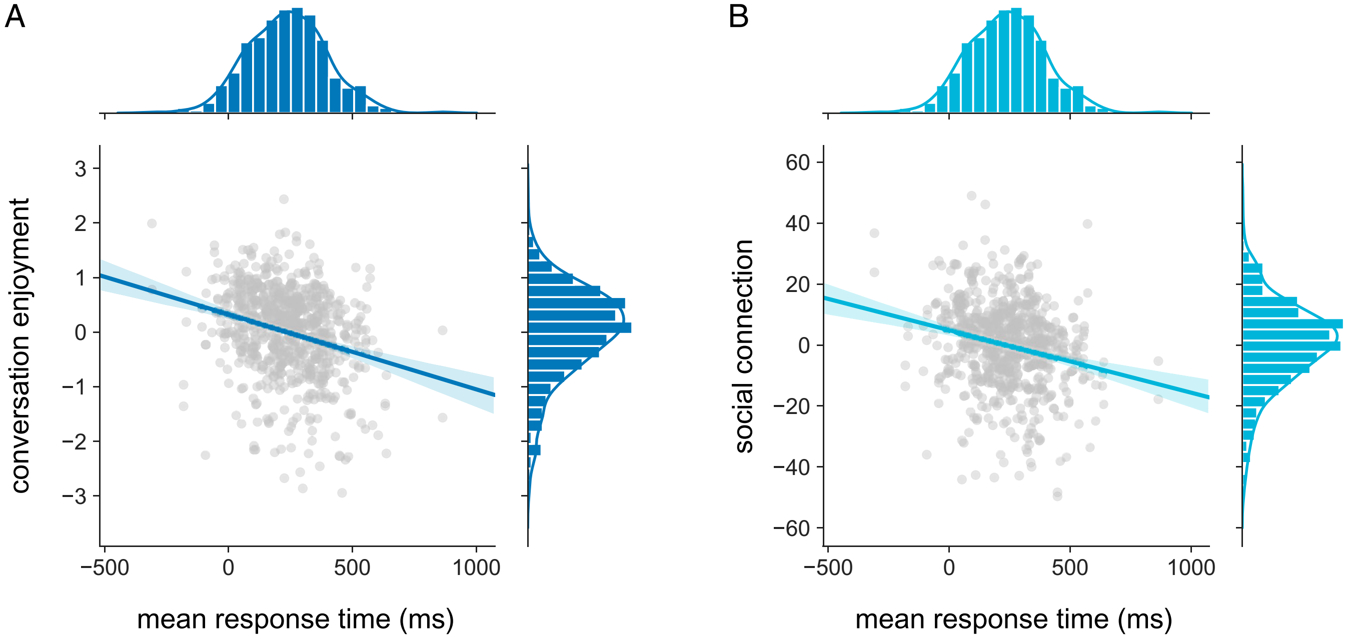

Fig. 2. Mean response time predicts conversation enjoyment (*A*) and social connection (*B*). DVs of enjoyment and connection are centered within-subject to reflect the random effect structure used in the mixed-effects models. Individual data points are displayed as gray dots. The line represents a regression model relating mean response time and each DV. The distribution of mean response times is plotted above the scatterplots, and the distribution of each DV is plotted to the right of the scatterplots.

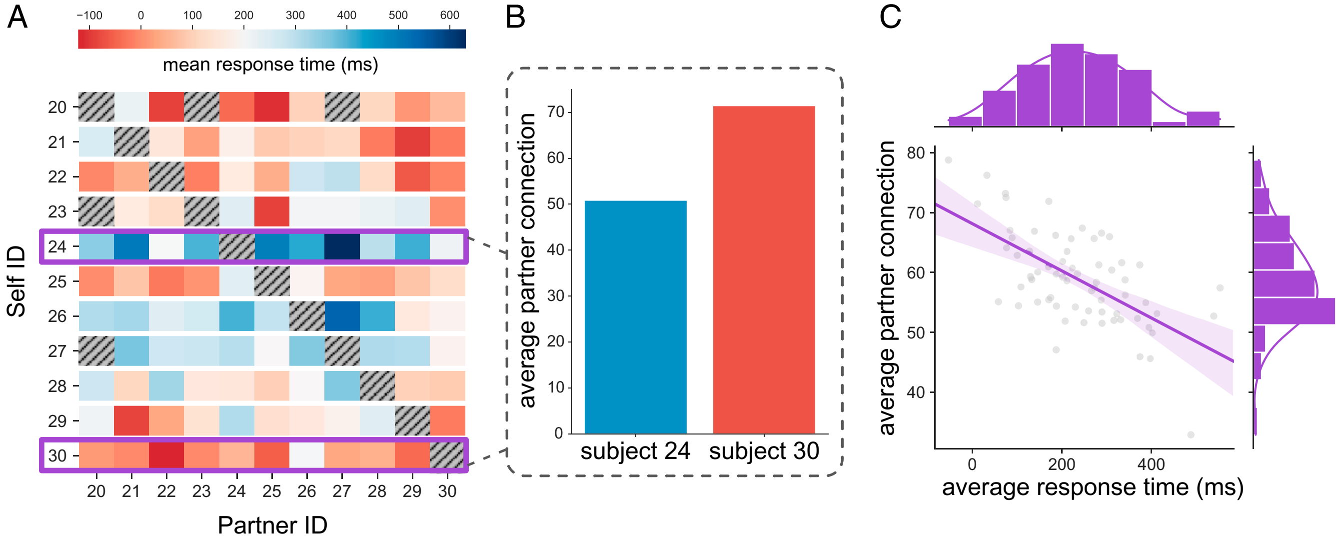

Fig. 3. Individual differences in response times predict connection across partners. (*A*) Real data from one round-robin network. The color of each cell indicates the mean response time for a given participant in each of their 10 conversations. The color bar is centered at 200 ms. Gray cells indicate missing data. As highlighted, participant 24 tended to have conversations with relatively slow response times, whereas participant 30 had conversations with relatively fast response times. (*B*) Average partner connection ratings for these two participants. (*C*) The relationship between average response time and average partner connection across all six round-robin participants (dots are individual participants). Distributions at the top and right depict the probability density functions for average response time and average partner connection, respectively.

and feelings of connection ($b = -0.63$, $SE = 0.10$, $P < 0.001$; Fig. 3) in their partners.

Taken together, we found evidence that faster response times relate to increased social connection across three different levels of analysis—across conversations, within conversations, and across individuals.

Study 2: Generalizing to a Different Context. In Study 1, we found evidence that faster response times in stranger conversations were robustly associated with increased social connection. Next, we were interested in assessing the generalizability of these results to additional conversational contexts. Specifically, we were interested in determining if this relationship was evident in people who were already strongly connected. Thus, in Study 2, we investigated whether response times predicted felt connection for real-world close friends. To test this hypothesis, a subset of participants from Study 1 ($n = 22$) returned to complete additional conversations with three of their friends ($n = 65$ conversations). These conversational partners were someone they 1) considered to be a close friend, 2) interacted with regularly, and 3) were not romantically involved with.

As a manipulation check, we confirmed that close friends in Study 2 rated their conversations more favorably overall than strangers in Study 1 [conversation enjoyment: $M_{friends} = 87.95$ ($SD = 14.52$), $M_{strangers} = 72.55$ ($SD = 20.95$), $t(251.28) = 10.15$, $P < 0.001$; see *SI Appendix*, Table S1 for all comparisons]. Indeed, reports of overall enjoyment and average connection between close friends were so uniformly high and invariant across dyads that they precluded across-conversation analysis. However, we were able to run the within-conversation analysis and leverage the dynamics of the continuous reported connection ratings to test whether time points with faster response times corresponded to relatively higher social connection. We observed that faster response times in conversations between close friends significantly predicted greater feelings of social connection ($b = -0.07$, $SE = 0.02$, $P < 0.001$) above and beyond a general increase in reported connection over the course of conversations ($b = 0.25$, $SE = 0.03$, $P < 0.001$). These results confirm that our findings from Study 1 appear to be robust to conversational context and are present not only in conversations with strangers but also when interacting with close friends.

Self and Partner Effects. In the analyses reported in Studies 1 and 2, we treated response time as a metric shared by conversation partners. However, this approach obscures whose response time is driving the effect. Are my feelings of connection predicted by how quickly I respond to you (self response time)? Are my feelings of connection predicted by how quickly you respond to me (partner response time)? Or are both response times equally important to connection (Fig. 4*A*)?

We first explored this idea using conversations between strangers from Study 1. Using a mixed-effects regression, we found that both self ($b = -0.11$, $SE = 0.05$, $P = 0.048$) and partner ($b = -0.27$, $SE = 0.05$, $P < 0.001$) response times independently and significantly explained variance in ratings of self enjoyment. In addition, we found that partner ($b = -0.22$, $SE = 0.05$, $P < 0.001$), but not self ($b = -0.08$, $SE = 0.05$, $P = 0.075$), response times significantly explained variance in ratings of self connection. We compared the magnitude of the self and partner effects using a contrast analysis and found that partner response times were consistently a better explanation of both enjoyment [$t(65) = -14.48$, $P < 0.001$] and connection [$t(65) = -8.63$, $P < 0.001$], compared to self response times (Fig. 4*B*).

Next, we explored whether these partner effects were also present in the connection dynamics within conversations. We tested this hypothesis for both stranger and friend conversations. Using a mixed-effects regression, we found that relative changes in connection ratings with strangers were significantly predicted by partner response times ($b = -0.03$, $SE = 0.00$, $P < 0.001$), but not self-response times ($b = -0.01$, $SE = 0.01$, $P = 0.279$), controlling for linear trends. A contrast test revealed that the magnitude of the partner response time effect was consistently stronger than the self response time effect across participants [$t(65) = -5.53$, $P < 0.001$; Fig. 4*C*]. We observed a similar pattern of results in the friend conversations. Social connection ratings were significantly and independently explained by both partner ($b = -0.06$, $SE =$

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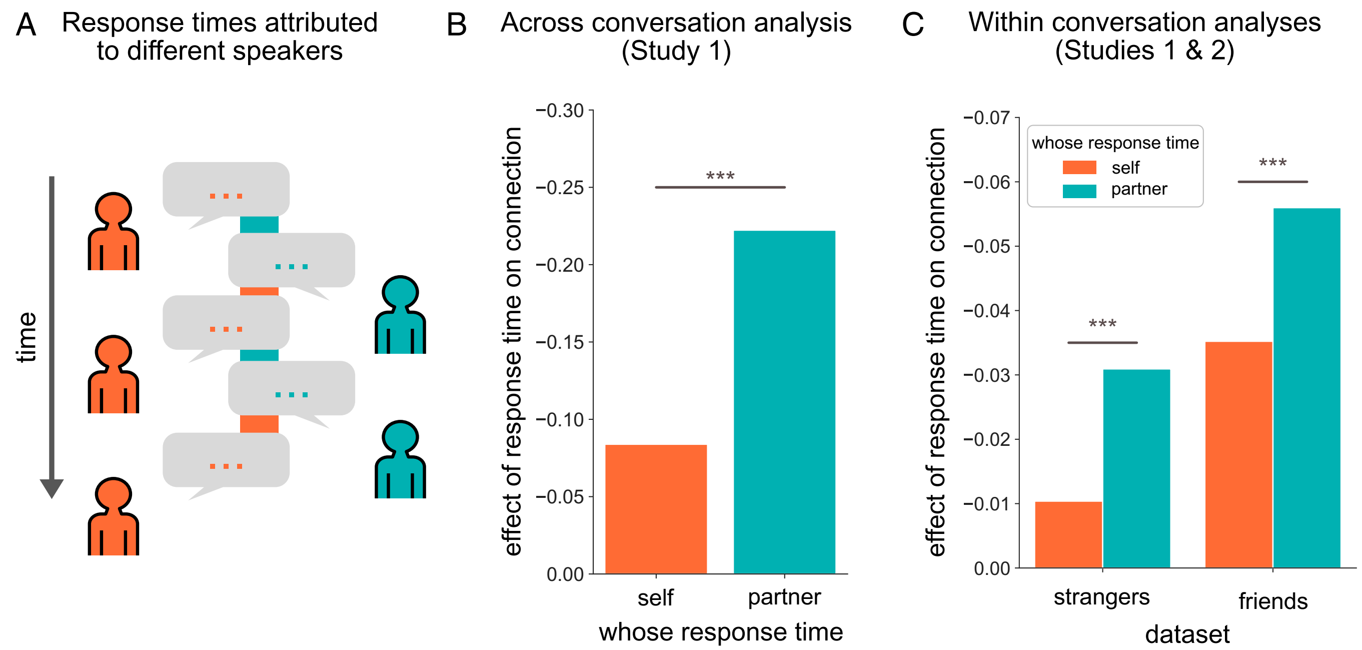

Fig. 4. Partner responsivity had a greater influence on connection than self-responsivity. (*A*) Each response time (depicted by rectangles between speech bubbles) was attributed to the speaker who ended the preceding silence. Response times are colored to match the person to whom they are attributed. (*B*) Beta coefficients for the effect of self and partner response times on self-reports of connection in the across conversation analysis (Study 1). (*C*) Beta coefficients for the effect of self and partner response times on self-reports of connection in the within-conversation analysis for strangers (Study 1) and friends (Study 2). Note that the *y*-axis labels have been flipped for readability, as more negative values indicate a stronger relationship between response time and connection. $^{***}P < 0.001$.

0.01, $P < 0.001$) and self ($b = -0.04$, $SE = 0.01$, $P = 0.006$) response times. However, the magnitude of the partner response time effect was consistently greater than the self response time effect [$t(86) = -7.77$, $P < 0.001$; Fig. 4*C*].

Together, these findings indicate that how much a person enjoys a conversation and feels connected to their partner is predicted more by how quickly their partner responds to them rather than by how quickly they respond to their partner.

Study 3: Manipulating Response Time. The previous analyses demonstrate that conversational moments with faster response times are robustly associated with increased feelings of enjoyment and connection compared to moments with slower response times across multiple levels of analyses and conversational contexts. Given this relationship, we wondered whether faster response times are, themselves, a sufficient signal of enjoyment and connection to outside observers.

In Study 3, we tested whether response time alone signals enjoyment and connection to third-party listeners. We selected short audio clips (∼10 turns) from the beginning of six conversations recorded in Study 1 and manipulated the length of the response times between speech turns (Fig. 5). Response times were shortened to one-fifth the original length in the fast condition and lengthened to twice the original length in the slow condition. The control condition maintained the original response times. Participants ($n = 450$) recruited on Amazon's Mechanical Turk listened to all six conversation segments, with each segment randomly assigned to one condition (i.e., control, fast, and slow). Participants judged the overall conversation enjoyment and connection between the conversation partners after listening to each segment.

We ran two linear mixed-effects models with a condition (control, fast, and slow) predicting each of our two dependent variables (DVs): perceived enjoyment and perceived connection.

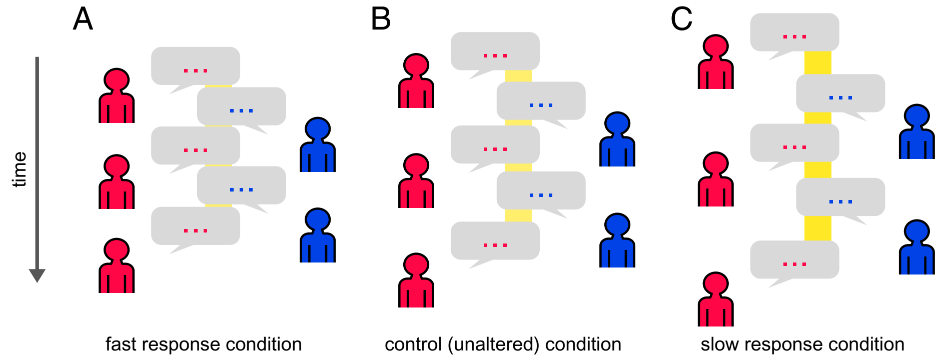

Fig. 5. Manipulation of response times. The length of the yellow rectangles indicates the length of each response time. (*A*) In the fast response condition, each response time was decreased to one-fifth its original length. (*B*) In the control condition, we used the original (unaltered) response times. (*C*) In the slow response condition, each response time was double its original length.

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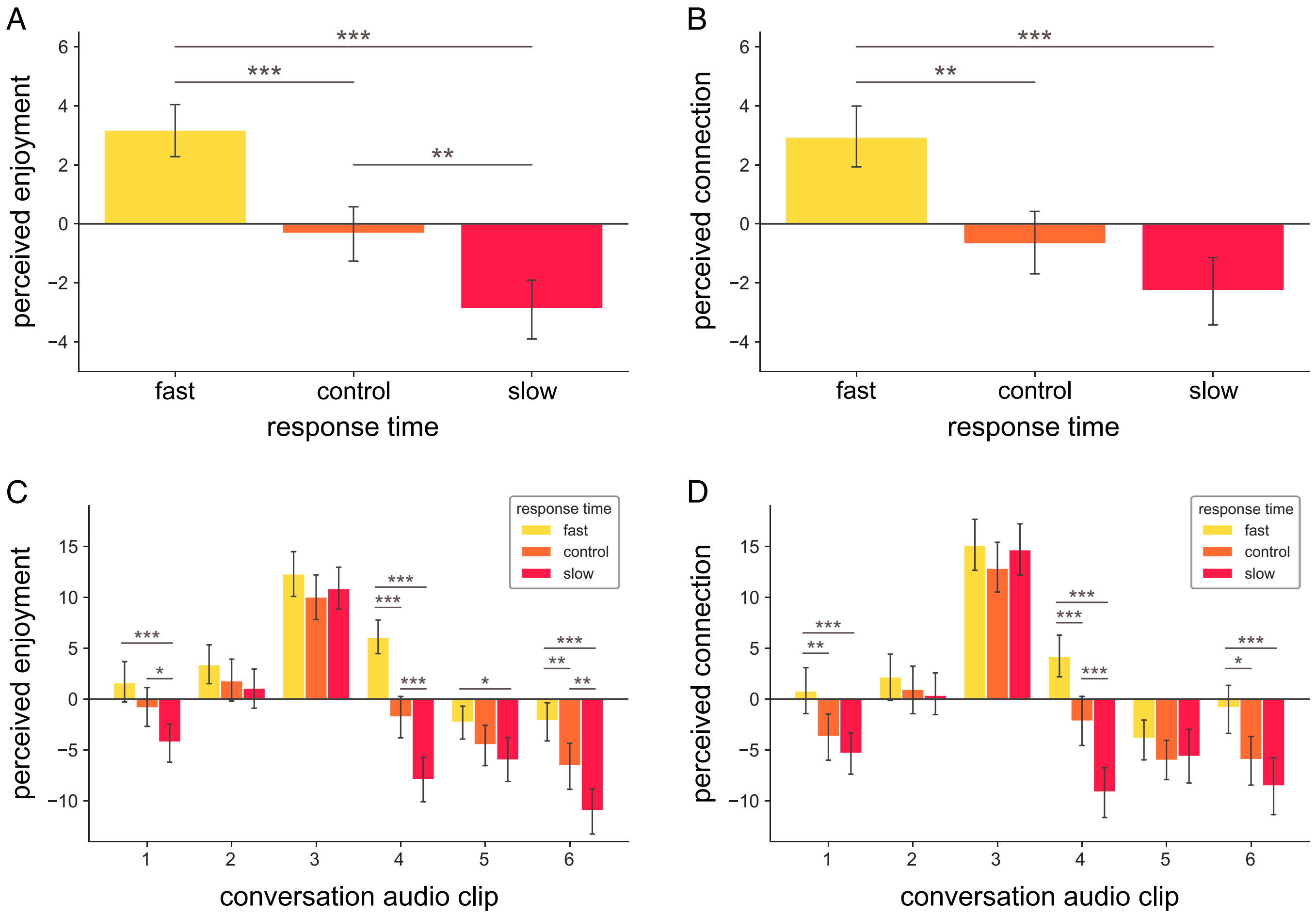

Fig. 6. Main effects of response time condition on average ratings of enjoyment (*A*) and connection (*B*) across conversations. Effect of response time condition on average ratings of enjoyment (*C*) and connection (*D*) for each of the six conversations, separately. All values are centered within-subject to reflect the random effect structure used in the mixed-effects model. *P* values have been adjusted for multiple comparisons using Holm's method. Error bars depict 95% CIs. **P* < 0.05, ***P* < 0.01, and ****P* < 0.001.

An ANOVA on these mixed-effects models yielded a significant effect of condition, such that response time inversely predicted perceived enjoyment [$F(2, 2{,}351.9) = 49.44$, $P < 0.001$] and connection [$F(2, 2{,}344.3) = 28.51$, $P < 0.001$, Fig. 6] by third-party listeners. That is, the same conversation was perceived as more enjoyable and connected when response times were decreased and less enjoyable and connected when response times were increased. The same conversation with unaltered response times was rated midway between the two altered versions. Specifically, ratings of enjoyment and connection were significantly lower for the unaltered version compared to when response times were decreased (fast condition). Ratings of enjoyment (but not connection) were significantly higher for the unaltered version compared to when response times were increased (slow condition). These findings were replicated in a second sample (*SI Appendix*, Fig. S7).

Unlike Studies 1 and 2, the relationship between response time and enjoyment/connection could not be explained by any other feature of the conversation that could conceivably covary with response time (e.g., conversation topic, vocal prosody, etc.). This is because only response times varied between versions; everything else about the conversation was held constant. Therefore, Study 3 provides strong evidence that fast response times not only covary with enjoyment and connection but they are a sufficient signal of enjoyment and connection to third-party listeners.

Discussion

Conversation is an incredible feat of coordination (15, 17, 23–26). We must pass the conversational baton within a split second and, as with professional athletes, a few milliseconds can make a striking difference. Here, we show that how quickly people pass this conversational baton is a robust marker of how connected they feel. Across two studies of unstructured, natural conversation, we found that faster response times were associated with increased social connection in conversations—both between strangers and friends. Reduced response times likely reinforce feelings of connection. At the same time, because the ability to respond quickly in conversation relies on accurately predicting what your partner is going to say and noticing when their turn is likely to end, we suspect that fast response times may be facilitated by feelings of connection. Natural conversation is likely marked by these mutually reinforcing dynamics.

Conversation enjoyment and connection were better explained by partner (versus self) response times. This suggests that when someone responds quickly it signals to their partner that they had been actively listening. This finding dovetails with the existing literature highlighting the importance of "feeling heard and understood" in conversation (30).

We further demonstrated that response time in conversation is, in and of itself, a sufficient signal of connection to outside observers. Holding everything else about the conversation constant, a split-second difference in response time was enough for outside observers to infer connection or a lack thereof. Importantly, listeners were never instructed to pay attention to the timing of turns. Observers may have implicitly learned that response time and connection covary. This finding extends prior work demonstrating that outside observers infer another's preferences (32), sincerity (33), and certainty (34) by how many seconds they take to make a decision between available options: Faster decisions appear to express stronger or "truer" preferences. Response time in natural conversation, on the order of milliseconds, may similarly be taken as a true signal of connection. That this signal is available to observers further suggests that response time may be used to determine who clicks with whom around us. This is consistent with previous research demonstrating that third-party observers are highly attuned to how others connect in their social network (35). The fact that response times evoke perceptions of connection when holding all else constant further suggests this heuristic traverses language barriers and may be available to preverbal infants (36).

It is important to acknowledge several limitations of these studies. First, the stranger conversations that we recorded consisted of undergraduate students engaging in polite, get-to-know-you talk. Participants knew their conversations would only last for 10 min, and there was no expectation that they would need to interact with their conversation partners again. This type of interaction happens frequently in our daily lives, especially when we move to a new place or start a new job, and is how most relationships begin. Conversations between close friends offered some generalizability beyond this domain, but there are many other types of conversation contexts that remain unexplored. For example, we might expect that response times relate differently to enjoyment and connection in conversations in which there is a clear goal (e.g., negotiation and interview) or in conversations that are antagonistic (e.g., an argument). Conversations with conflict are characterized by people speaking on top of each other and jumping in quickly (37, 38). In this context, fast response times might actually signal that two people are not listening to each other (39). However, it may also be the case that rapid turn taking is still signaling psychological investment, either in the partner or the topic being discussed. More research is needed to better understand the role of response times in different conversational contexts. Second, our sample was from a Western, educated, industrialized, rich, and democratic (i.e., WEIRD) population (40). Although the average response time between strangers is remarkably consistent cross-culturally (2), that average may obscure interesting cultural variations that may likewise differ across conversational contexts. Finally, our sample does not allow us to investigate the myriad ways that particular dyadic compositions can influence conversational dynamics. More research is needed to explore how turn-taking behavior changes as a function of two or more people sharing or not sharing the same backgrounds, demographics (e.g., gender, race, and age), social status, or other aspects of identity.

Although we reliably found stronger effects for partner (versus self) responsivity, our results cannot adjudicate what determined any specific response time. Speeded responses are likely facilitated by a number of self and partner factors, including, but not limited to, partner attention, communicative clarity (e.g., signposting when a turn is ending), emotional salience, and topic expertise. The present finding—that response time indexes connection—opens up future research to investigate the (likely many) mechanisms by which this is achieved.

In summary, across three studies, we showed that response time in conversation has important social consequences. Response times in everyday conversation are remarkably short (2, 18, 19). They are simply too fast to be under conscious control (20, 21) and thus cannot be faked. This brevity is a feat of coordination that provides a natural, "honest" heuristic about how well the conversation is going (41). Moreover, by virtue of being a feature of conversation itself rather than requiring post hoc self-report and by virtue of being a signal readily accessible to outside observers, response times may provide a useful metric for future research investigating the conditions that diminish and enhance connection. Conversation is typically discussed in terms of what people talk about. The present findings reveal that the when of conversation—how fast one partner responds to the other—is also important, providing a robust, efficient, and honest signal of social connection.

Materials and Methods

Study 1.

Participants. A total of 66 Dartmouth undergraduate students (33 female) participated in exchange for course credit. We used a round-robin design (Fig. 1*A*), with every round consisting of 11 same-gender participants. We chose to limit this dataset to same-gender dyads given that there may be additional dynamics at play in mixed versus same-gender interactions. All participants were scheduled to complete 10 conversation sessions, one with every other member of the round-robin. We collected six round-robin groups with a goal of recording 330 conversation sessions. We were unable to complete eight sessions because of medical, scheduling, or technical issues. We collected a total of 322 conversation sessions. All reported studies were approved by the Dartmouth Committee for the Protection of Human Subjects, and all participants provided informed consent prior to participation.

The majority of participants had never met each other prior to their conversation. In response to the question "How well did you know your study partner before today?" (0 = Not well at all, 50 = Moderately well, and 100 = Extremely well), the mean response was 8.98 (*SD* = 20.55). We therefore refer to participants in this study as "strangers." Note that all reported effects hold after removing dyads who knew each other before the study.

Study design. In each study session, two participants entered the laboratory and had an unstructured, 10-min conversation with each other that was video and audio recorded. Participants were told that they were free to talk about whatever they wanted. After the 10-min conversation, participants were separated into private rooms where they completed a Qualtrics survey about the conversation they just had and about the conversation partner they just met (see *SI Appendix A* for the full list of survey items). Participants then completed a second task that required them to watch the video recording of their conversation. As they watched, participants continuously rated how connected they remembered feeling to their conversation partner at each moment in time. Participants made these ratings by using a computer mouse to move a slider bar on the screen (Fig. 1*C*). Each session took about 30 min to complete. Participants never had more than three conversation sessions on any given day.

Defining primary DVs. We conducted a factor analysis on the post–conversation survey items after ensuring our items passed both Bartlett's test of sphericity and the Kaiser–Meyer–Olkin test. The factor that accounted for the most variance (34%) loaded onto questions related to conversation enjoyment. We, therefore, used this factor as our DV of conversation enjoyment. Questions included, "How much did you enjoy the conversation you had with your study partner?" and "How well did this conversation 'flow'?" (see *SI Appendix*, Fig. S1 for all factor loadings).

Our second DV was social connection. To calculate this measure, we took the mean of the continuous connection ratings that participants made as they watched their conversation recording.

Defining response time. The recorded conversations were transcribed by an external transcription company. Each speech turn in each transcript included the speaker's identity, the timestamp indicating when the speaker started talking, the timestamp when the speaker finished talking, and the transcription of what they said. All of the timestamps included millisecond precision. This level of fidelity was especially important for our research question, as we expected the average response time to be ~200 ms.

Response time was calculated by taking the start timestamp of a given turn and subtracting the end timestamp of the previous turn. Response times with negative values indicate instances when speakers overlap. See *SI Appendix* for more details about our transcriptions.

Statistical models. For all reported analyses, we used lme4 (42) implemented in R (43) to perform linear mixed-effects regressions. Degrees of freedom and *P* values were approximated using Satterthwaite's method, and we report standardized regression coefficients to increase interpretability.

Across conversation analysis. We predicted each of our two DVs (i.e., conversation enjoyment and social connection) using average response time in a given conversation. Because subjects participated in multiple conversations, we included subject ID as a random intercept. Because the relationship between response time and each of our two DVs could vary between different subjects, we also included response time as a random slope.

Within conversation analysis. We ran a linear mixed-effects model predicting the temporal dynamics of social connection based on fluctuations in average response time controlling for linear effects of time. To account for variations in average response time between dyads, we included dyad ID as a random intercept and additionally modeled subject ID as a random intercept because subjects participated in multiple conversations. We modeled response time as a random slope for subject ID to account for the fact that the relationship between response time and connection may vary between subjects. We also modeled the linear effect of time as a random slope for dyad ID to account for the fact that the relationship between time and connection may vary between dyads.

To investigate the robustness of this effect, we generated surrogate data by randomly permuting the order of response times within each conversation using a circle-shifting procedure and refitting the model predicting social connection 100 times (44). This nonparametric analysis generates an empirical null distribution of random shuffles of our data while maintaining the structure of any inherent temporal autocorrelation. Importantly, this demonstrates that our results cannot be explained by any offsets in lag between changes in response time and connection ratings (*SI Appendix*, Fig. S3). Moreover, these results appear to be robust to bin size, as we observed similar effects across a range of different bin sizes (*SI Appendix*, Fig. S3).

Study 2. We invited all 66 participants from Study 1 to participate in this follow-up study. A total of 22 of those participants were willing and able to participate. Participants completed the same study procedure as outlined in Study 1, with three of their close friends as their study partners. Dyads could be same or mixed gender for this study (female/female = 32, male/male = 20, and female/male = 13). Given the small sample sizes within each of these categories, we did not analyze differences between these groups. We collected a total of 65 conversation sessions, transcribing the friend conversations in the same manner as described in Study 1 and similarly computing the response time between each speech turn. We used the same within-conversation analysis as described in Study 1, and these analyses also passed the same robustness checks (*SI Appendix*, Fig. S4).

Self Versus Partner Effects.

Across conversation analysis (Study 1). For the across conversation version, we ran two different linear mixed-effects models that included average response time for self and partner as fixed effects predicting each of our two DVs (i.e., conversation enjoyment and social connection). Because subjects participated in multiple conversations, we included subject ID as a random intercept. Because the relationship between response time and each of our two DVs could vary between different subjects, we also included self response time and partner response time as random slopes.

Within conversation analysis (Studies 1 and 2). For the within conversation version, we ran a linear mixed-effects model with average response time for self, average response time for partner, and bin number as fixed effects predicting self connection ratings in each bin. To account for variations in average response time between dyads, we included dyad ID as a random intercept and, additionally, modeled subject ID as a random intercept because subjects participated in multiple conversations. We modeled self and partner response times as random slopes for subject ID to account for the fact that the relationship between response time and connection may vary between subjects. We also modeled bin number as a random slope for dyad ID to account for the fact that the relationship between time and connection may vary between dyads.

To run the contrast that determined whether the effect of partner response time was stronger than the effect of self response time, we extracted the beta coefficients for each individual subject and contrasted the betas for the effect of self response time with the betas for the effect of partner response time. We used a one-sample t test with 0 as the reference point to perform a hypothesis test.

Study 3. In Study 3, we tested the hypothesis that third-party perceptions of social connection would be causally influenced by speaker response times. We identified six conversations from Study 1 (three male and three female) that had minimal overlapping speech, in which both participants had signed a video release permitting us to use their recording in subsequent studies. For each video, we selected a short audio clip from the start of their conversation that comprised about 10 turns back and forth (min number of turns = 9, max number of turns = 13, and mean clip length = 23.33 s). We used these stimuli to create three separate conditions by manipulating the response times for each speaker. In the control condition, the response times between speech turns were the length they were in the original audio file (M = 278.55 ms). In the fast condition, each response time was manipulated to be one-fifth the original length (M = 55.68 ms). In the slow condition, each response time was manipulated to be twice the original length (M = 557.14 ms). See *SI Appendix* for further details of how we manipulated these audio files. The methods of this study, as well as our hypotheses, were preregistered prior to collecting data (https://osf.io/u2brn).

A total of 450 participants recruited on Amazon's Mechanical Turk listened to one version of each of the six conversation segments, presented in a random order. All participants heard each conversation segment only once, and the version (control, fast, and slow) of that conversation segment was randomly assigned. This random assignment was blocked such that, over all participants, each conversation segment was presented an equal number of times across all three conditions.

After listening to each conversation segment, participants responded to two questions: 1) How much do you think these people enjoyed their conversation? and 2) How connected do you think these people felt toward each other? Participants responded using a slider bar anchored by "Not at all" (0) and "Very much" (100).

To access the study, participants were first asked to complete a simple task (correctly typing the word spoken in the audio file) to ensure that only participants who were able to listen and respond to audio instructions were included in data analysis.

We ran two linear mixed-effects models with condition (control, fast response time, and slow response time) predicting each of our two DVs: perceived enjoyment and perceived connection. We included subject ID and conversation ID (e.g., which of the six conversations were being judged) as random intercepts.

Data Availability. Deidentified data for all studies as well as data analysis scripts are available at https://github.com/emtempleton/GapPaper.

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