

Do conversations end when people want them to?

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Do conversations end when people want them to? Surprisingly, behavioral science provides no answer to this fundamental question about the most ubiquitous of all human social activities. In two studies of 932 conversations, we asked conversants to report when they had wanted a conversation to end and to estimate when their partner (who was an intimate in Study 1 and a stranger in Study 2) had wanted it to end. Results showed that conversations almost never ended when both conversants wanted them to and rarely ended when even one conversant wanted them to and that the average discrepancy between desired and actual durations was roughly half the duration of the conversation. Conversants had little idea when their partners wanted to end and underestimated how discrepant their partners' desires were from their own. These studies suggest that ending conversations is a classic "coordination problem" that humans are unable to solve because doing so requires information that they normally keep from each other. As a result, most conversations appear to end when no one wants them to.

conversation | social interaction | social judgment

People seek advice and give advice, propose marriage and end marriage, land jobs and lose jobs, pass the buck and pass the time—and they do all these things by exchanging words. Conversation is so universal and ubiquitous that an alien observer could be forgiven for concluding that human beings were mainly designed to eat, sleep, and vibrate their vocal cords in each other's presence. Conversation is common, but it is not simple, which is why modern computers can pilot aircraft and perform surgery but still cannot carry on anything but a parody of a conversation. To converse, people must generate and comprehend language in real time, alternate turns in rapid sequence, infer what their partners know and want to know, remember what has and hasn't been said, and much more (1–3). Conversation is a bundle of complex tasks that seem simple only because human beings generally do them well (4) and fail to notice when they do them poorly (5, 6).

One of those tasks is ending. Although some conversations are terminated by external circumstance—a train arrives, a school bell rings, a bar closes—in many cases, people who have decided to start talking must also decide to stop. Psychologists, linguists, and communications scholars (7–9) have studied the “closing rituals” that people use to end their conversations—the stock phrases (“It’s been great talking to you”), verbal gambits (“I’ve got a thing at noon”), and subtle segues (“So anyway”)—but they have not studied how and when people decide to use them. On the face of it, this may not seem like a particularly difficult question. After all, people converse for a wide variety of reasons, from resolving disputes and seeking solace to exchanging gossip and maintaining friendships (10–14), and achieving the goal that brought them to a conversation provides an obvious point for their departure. If conversants come to a conversation with the same goal, then we might expect their conversation to end when they have achieved it, and if they come with different goals, then we might expect their conversation to end when the first of them has achieved it. Two employees who meet to find the best date for the company picnic may part ways when they find one, and two strangers who chat for pleasure at a party may continue until

one of them grows weary, makes an excuse, and wanders away. If conversation is a means by which people achieve a variety of goals, then conversations should end when one or both conversants has done just that.

But ending conversations may not be as simple as it sounds. One of the primary goals of conversation is to establish and maintain social relationships (15, 16), and so conversants typically observe a host of conventions that are designed to protect each other's feelings (17, 18). Terminating a conversation when one's partner wants to keep talking or perpetuating a conversation when one's partner wants to stop are both social ruptures that can undermine relationships and reputations, so rather than simply ending when they want to, conversants may try to end at a time that takes both their desires and their partner's desires into account. If so, then ending conversations may be a “coordination problem” (19, 20), much like the prisoner's dilemma, in which a person's actions depend on what they think another person will and wants to do. Research shows that coordination problems are readily solved when players can communicate honestly (21), but honestly communicating a desire to terminate a conversation may itself be a social rupture. As such, conversants may mask such desires rather than communicating them, thereby depriving each other of the very information they need to solve the coordination problem that ending a conversation poses.

How do humans solve this problem? Do they have a method for ensuring that conversations will end when everyone wants them to—or at least when someone wants them to? Or is a conversation typically an exercise in discoordination that ends when precisely no one wants it to? Although conversation is surely the most common of all social activities—if only because most other social activities include it—science offers no answer to this fundamental question. To remedy this deficit, we conducted two studies in which we asked people who had engaged in

Significance

Social connection is essential to physical and psychological well-being, and conversation is the primary means by which it is achieved. And yet, scientists know little about it—about how it starts, how it unfolds, or how it ends. Our studies attempted to remedy this deficit, and their results were surprising: conversations almost never end when anyone wants them to! At a moment in history when billions of people have been forced to curtail their normal social activities and to reimagine this one, a scientific understanding of conversation could hardly be timelier.

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Table 1. Main results of study 1

Row		Notation	Mean	SD	95% CI of mean	Median
Measures						
1	Actual duration	A_{xy}	13.97	11.51	13.18 14.76	10.00
2	Participant's desired duration	D_x	15.88	17.91	14.62 17.07	10.00
3	Participant's estimate of partner's desired duration	$E_x(D_y)$	19.75	21.00	18.27 21.14	14.00
Did participants get what they wanted?						
4	Simple difference between actual duration and participant's desired duration	$A_{xy} - D_x$	-1.91	12.65	-2.77 -1.02	0.00
5	Absolute value of the simple difference between actual duration and participant's desired duration	$ A_{xy} - D_x $	6.60	10.95	5.83 7.33	3.00
6	Proportional difference between actual duration and participant's desired duration	$\frac{A_{xy} - D_x}{A_{xy}}$	-24.08%	141.35%	-33.17% -13.62%	0.00%
7	Absolute value of the proportional difference between actual duration and participant's desired duration	$\frac{ A_{xy} - D_x }{A_{xy}}$	56.01%	131.98%	46.37% 64.43%	33.33%
Did participants think their partner got what they wanted?						
8	Simple difference between actual duration and participant's estimate of partner's desired duration	$A_{xy} - E_x(D_y)$	-5.78	15.68	-6.81 -4.69	0.00
9	Proportional difference between actual duration and participant's estimate of partner's desired duration	$\frac{A_{xy} - E_x(D_y)}{A_{xy}}$	-61.60%	213.26%	-75.35% -46.14%	0.00
10	Absolute value of the simple difference between actual duration and participant's estimate of partner's desired duration	$ A_{xy} - E_x(D_y) $	8.66	14.30	7.65 9.62	3.00
11	Absolute value of the proportional difference between actual duration and participant's estimate of partner's desired duration	$\frac{ A_{xy} - E_x(D_y) }{A_{xy}}$	80.88%	206.71%	65.83% 94.27%	33.33%
Did participants think that they and their partner wanted the same thing?						
12	Simple difference between participant's desired duration and participant's estimate of partner's desired duration	$D_x - E_x(D_y)$	-3.87	15.45	-4.90 -2.82	0.00
13	Proportional difference between participant's desired duration and participant's estimate of partner's desired duration	$\frac{D_x - E_x(D_y)}{A_{xy}}$	-37.52%	192.86%	-50.21% -23.47%	0.00
14	Absolute value of simple difference between participant's desired duration and participant's estimate of partner's desired duration	$ D_x - E_x(D_y) $	7.73	13.93	6.77 8.66	2.00
15	Absolute value of the proportional difference between participant's desired duration and participant's estimate of partner's desired duration	$\frac{ D_x - E_x(D_y) }{A_{xy}}$	75.95%	181.27%	63.09% 87.82%	20.00%

The actual duration of the conversation between a participant (Person X) and their partner (Person Y) is notated as A_{xy} , a participant's desired duration is notated as D_x , and a participant's estimate of their partner's desired duration is notated as $E_x(D_y)$. Proportional values are shown as percentages. 95% CIs for means were calculated with 10,000 replicates using the "boot" package in R (24). Note that the mean of a set of proportional differences is not necessarily equal to the mean of a set of differences expressed as a proportion, which is why the value shown in row 6 is not equal to the value shown in row 4 divided by the value shown in row 1.

a dyadic conversation to report whether and when they had wanted it to end and whether and when they thought their partner had wanted it to end. Knowing their answers to these questions, as well as the actual duration of their conversations, allowed us to determine whether conversants generally wanted to end at about the same time, whether they were able to accurately estimate when their partners wanted to end, and whether they were able to use this estimate to end their conversations when both of them—or at least one of them—wanted to. In Study 1, we examined people's conversations with intimates (i.e., romantic partners, family, and friends) in everyday life, and in Study 2 we examined people's conversations with strangers in a laboratory.

Study 1: Conversations between Intimates

Method. The procedures for all studies were approved by the Harvard University Committee on the Use of Human Subjects, and all participants provided informed consent prior to participation. Eight hundred and six people (367 female and 439 male, $M_{age} = 36.78$ y) completed an online survey that asked them to

recall their most recent conversation and to report its duration. They were then asked to report whether there was a point during the conversation at which they had felt ready for it to end, and if so, to estimate that point, and if not, to estimate how much longer they wished the conversation had continued. They were then asked to estimate how their conversation partner would answer these questions. Finally, they were asked some basic questions about their conversation (e.g., when it took place) and their partner (e.g., how often they conversed).

Results. The vast majority of participants reported on a conversation that had occurred that day or the day before (78.41%) and that was with a romantic partner, friend, or family member (79.16%) whom they had known for a year or more (88.59%) and to whom they spoke at least a few times each week (84.12%). Other general features of these conversations are described in *Materials and Methods*.

Validation of primary dependent measure. We asked participants whether there was a point during the conversation at which they had felt ready for it to end, and 66.51% answered yes and then

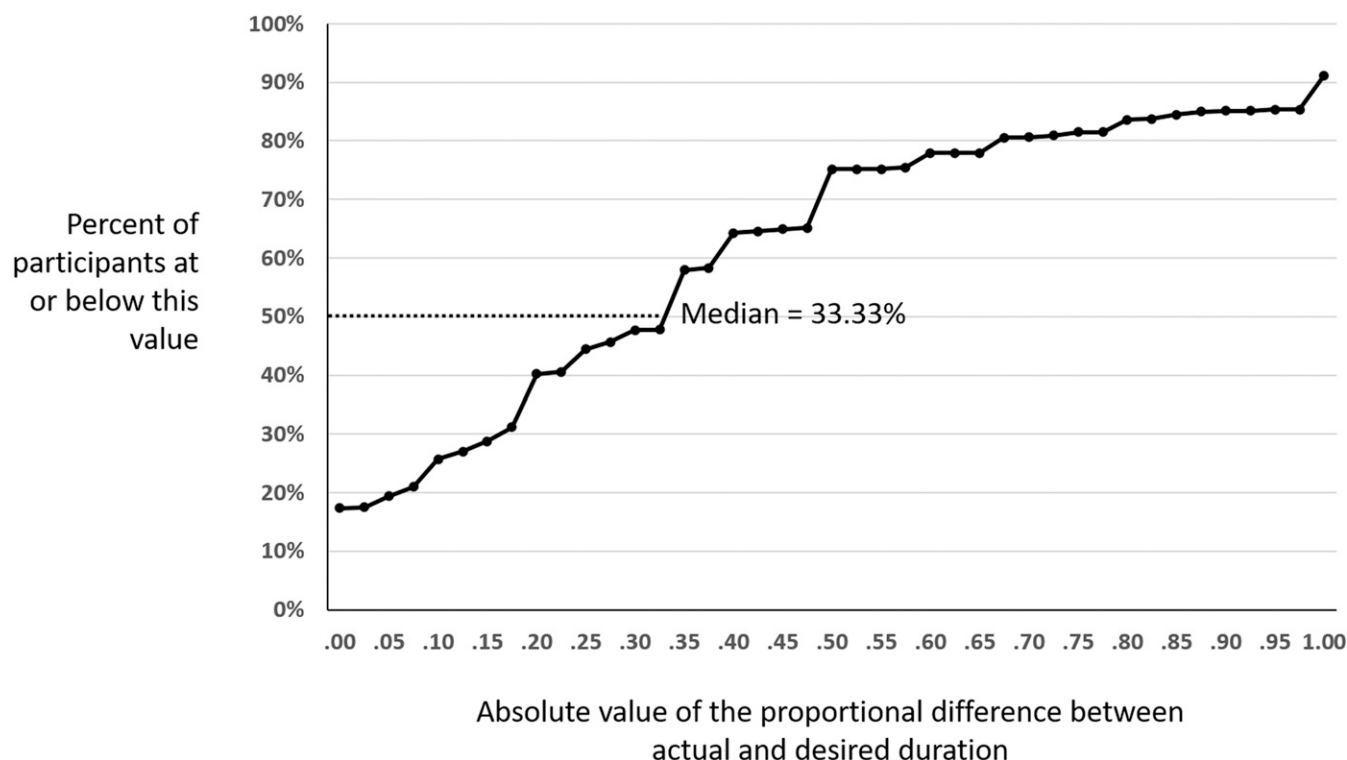


Fig. 1. Distribution of the absolute value of the proportional difference between actual duration and participant's desired duration in Study 1. This figure shows the 91.19% of participants whose x-axis values were ≤ 1 .

indicated when they first had that feeling to the nearest minute. Does that answer mean that these participants had a true desire for their conversations to end at the point they indicated? There are at least two reasons to believe it does. First, participants who answered yes enjoyed the conversation considerably less than did those who answered no ($M_{\text{yes}} = 4.70$, $M_{\text{no}} = 5.66$, $t(804) = -8.69$, 95% CI = -1.18 , -0.74 ; $P < 0.001$), which is what one would expect if participants' answers to the question about "feeling ready to end" reflected their true desires. Second, to further validate this measure, we ran an additional Study S1 (described in *SI Appendix*). In this study, we once again asked participants whether there was a point during the conversation at which they had felt ready for it to end, and then, in addition, we asked them if they would have preferred the conversation to have ended at that point and if it would have been better if the conversation had ended at that point. Of those who reported that there was a point at which they felt ready for the conversation to end, 85.35% also reported that they would have preferred their conversation to have ended at that point, and 72.89% reported that it would have been better if the conversation had ended at that point. Taken together, these data strongly suggest that when participants in Study 1 reported that they felt ready for their conversations to end, they were expressing a true desire.

Participants appear to have been expressing a true desire, but were their true desires momentary rather than enduring? To answer this question, we ran Study S2 (described in *SI Appendix*). As in Studies 1 and S1, we once again asked participants if there was a time at which they felt ready for the conversation to end. We then asked the 80.92% who answered yes to that question to report whether they did or did not continue to feel that way for most of the remaining part of the conversation. A full 90.57% of participants who reported that they had felt ready to end also reported that they continued to feel that way for the remainder of the conversation.

The data from Studies 1, S1, and S2 suggest that participants in Study 1 who reported that they felt ready for their conversation to end were reporting a true and enduring desire. As such, for participants in Study 1 who reported feeling ready to end, we defined their desired duration as the minute the participant reported feeling that way. For participants in Study 1 who did not report feeling ready to end, we defined their desired duration as the conversation's actual duration plus the number of additional minutes the participant reported wishing the conversation had continued.

Did participants get what they wanted? We began by calculating the difference between the conversation's actual duration and each participant's desired duration (Table 1, row 4). On average, participants wished their conversations had been 1.91 min longer than they were. Does this relatively small difference mean that participants were reasonably close to getting what they wanted? No. It means that when the differences between desired and actual durations are averaged across participants, the differences with positive signs and the differences with negative signs largely cancel each other. Indeed, when we calculated the absolute value of this difference for each participant (Table 1, row 5), the analysis revealed that on average, participants wished their conversations had been 1.91 min longer than they were but 6.60 min different than they were.

Is 6.60 min a large or small difference? To put that value in perspective, we subtracted each participant's desired duration from the conversation's actual duration and then divided that quantity by the conversation's actual duration (Table 1, row 6) to produce a "proportional difference" between the two measures. On average, participants wished their conversations had been 24.08% longer than they were (median = 0.00%)*. Although this

*We report medians in the text whenever they differ substantially from means. Table 1 shows both means and medians for all measures.

mean value is substantial, it actually underestimates the discrepancy between what participants wanted and what they got because when averaged, proportional differences with positive signs and proportional differences with negative signs largely cancel each other. Indeed, when we calculated the absolute value of this proportional difference for each participant (Table 1, row 7), we found that on average, participants wished their conversations had been 24.08% longer than they were but a remarkable 56.01% different than they were! Two things are worth noting. First, this remarkable result was replicated in Studies S1 and S2 (*SI Appendix, Table S1*, row 7). Second, as Fig. 1 shows, the size of this value did not depend on just a few participants: Half the participants wished their conversations had been different by a third or more of the conversation's duration (as indicated by the position of the median in Fig. 1).

Did participants think their partners got what they wanted? We asked participants whether they thought there was a point in the conversation at which their partner felt ready for the conversation to end. For those who answered yes (53.10%) we defined their estimated partner's desired duration as the minute the participant believed their partner felt ready for the conversation to end, and for those who answered no (46.90%) we defined their estimated partner's desired duration as the actual duration plus the number of additional minutes they believed their partner wished the conversation had continued. On average, participants believed that their partners wished the conversation had been 5.78 min or 61.60% longer than it was (Table 1, rows 8 to 9) and 8.66 min or 80.88% (median = 33.33%) different than it was (Table 1, rows 10 to 11). In short, participants did not come close to getting what they wanted and thought their partners did not come close either.

Did participants think that they and their partners wanted the same thing? Why didn't conversations end when the conversants wanted them to? One possibility is that the conversants didn't want the same thing, which would have made it impossible for both to get what they wanted. Did participants think that they and their partners wanted the same thing? On average, participants believed that their desired duration was shorter than their partner's desired duration by 3.87 min or 37.52% of the conversation's duration (Table 1, rows 12 to 13) and different from their partner's desired duration by 7.73 min or 75.95% (median = 20%) of the conversation's duration (Table 1, rows 14 to 15). In short, participants did not think that they and their partners wanted the same thing; specifically, they thought that they wanted to stop talking before their partners did.

Study 2: Conversations between Strangers

Participants in Study 1 rarely stopped talking when they wanted to. They did not get what they wanted, they did not think their partners got what they wanted, and they did not think that they and their partners wanted the same thing. One limitation of Study 1 is that participants told us about their partners, but their partners did not tell us about themselves. As such, we do not know whether participants' beliefs about their partners were accurate. A second limitation of Study 1 is that some participants reported that their conversations had been terminated by external circumstances, which might explain why those conversations did not end when participants wanted them to. Of course, what appeared to participants to be "termination by external circumstances" could well have been excuse-making by their partners ("I really wish I could keep talking, but I have this appointment at two o'clock"), so we do not actually know whether these conversations were externally terminated. A third and final limitation of Study 1 is that participants recalled conversations that had typically taken place earlier that day or the day before. If for some reason people have systematically biased memories of their conversations, then this could be a problem. In Study 2, we overcame these three limitations by

introducing previously unacquainted people, allowing them to converse until they terminated their conversations, and then asking them both about a conversation that had ended just moments before.

Method. Two hundred and fifty-two participants (157 female, 92 male, and 3 "other," $M_{\text{age}} = 23.10$ y) reported to our laboratory for a 1-h experiment, were paired with a stranger, and were told to "talk about whatever you like for as little time or as much time as you like, as long as it is more than 1 minute and less than 45 minutes." To ensure that participants had no incentive to terminate their conversations prematurely, the experimenter explained that when participants were finished talking, they would be brought to separate rooms where they would complete additional tasks for the remainder of the hour. When the conversation ended, participants were asked whether there was a point in the conversation at which they had felt ready for it to end, and if so, to estimate that point, and if not, to estimate how much longer they wished the conversation had continued. Then they were asked to estimate how their conversation partner had answered these questions.

Results. We asked participants whether there was a point during the conversation at which they had felt ready for it to end, and 68.65% answered yes and 31.35% answered no. These values are nearly identical to the values seen in Study 1 (which were 66.51% and 34.49%, respectively). As in Study 1, participants who answered yes enjoyed the conversation less than did those who answered no ($M_{\text{yes}} = 5.21$, $M_{\text{no}} = 5.86$, $t(250) = -4.02$, 95% CI = -0.97 , -0.33 ; $P < 0.001$). As in Study 1, for those who answered yes we defined their desired duration as the minute the participant reported feeling ready for the conversation to end, and for those who answered no we defined their desired duration as the conversation's actual duration plus the number of additional minutes the participant reported wishing the conversation had continued.

Did participants get what they wanted? We calculated the difference between the conversation's actual duration and each participant's desired duration (Table 2, row 4). On average, participants wished their conversations had been 0.62 min longer than they were. Does this relatively small value mean that participants were extremely close to getting what they wanted? No. As in Study 1, it means that when the differences between desired and actual durations are averaged across participants, the differences with positive signs and the differences with negative signs largely cancel each other. Indeed, when we calculated the absolute value of this difference for each participant (Table 2, row 5), the analysis revealed that on average, participants wished their conversations had been 0.62 min longer than they were but 7.45 min different than they were.

Is 7.45 min a large or small difference? To put that value in perspective, we subtracted each participant's desired duration from the conversation's actual duration and then divided that quantity by the conversation's actual duration (Table 2, row 6) to produce a proportional difference between the two measures. On average, participants wished their conversations had been 13.71% longer than they were. This value is substantial, but as in Study 1, it underestimates the discrepancy between what participants wanted and what they got because when averaged, proportional differences with positive signs and proportional differences with negative signs largely cancel each other. Indeed, when we calculated the absolute value of this proportional difference for each participant (Table 2, row 7), we found that on average, participants wished their conversations had been 13.71% longer than they were but a remarkable 46.03% different than they were. As Fig. 2 shows, the size of this value did not depend on just a few participants. Indeed, half the participants

wished their conversations had been different by a quarter or more of the conversation's duration (as indicated by the position of the median in Fig. 2).

Did participants think their partners got what they wanted? We asked participants whether they thought there was a point in the conversation at which their partner felt ready for the conversation to

Table 2. Results of study 2

Row		Notation	Mean	SD	95% CI of mean	Median
Measures						
1	Actual duration	A_{xy}	20.19	11.80	18.74 21.61	19.00
2	Participant's desired duration	D_x	20.81	16.34	18.73 22.76	17.00
3	Participant's estimate of partner's desired duration	$E_x(D_y)$	18.84	15.54	16.86 20.70	15.00
Did participants get what they wanted?						
4	Simple difference between actual duration and participant's desired duration	$A_{xy} - D_x$	-0.62	12.81	-2.14 1.05	1.00
5	Absolute value of the simple difference between actual duration and participant's desired duration	$ A_{xy} - D_x $	7.45	10.42	6.07 8.68	5.00
6	Proportional difference between actual duration and participant's desired duration	$\frac{A_{xy} - D_x}{A_{xy}}$	-13.71%	119.68%	-26.55% 2.85%	-5.63%
7	Absolute value of the proportional difference between actual duration and participant's desired duration	$\frac{ A_{xy} - D_x }{A_{xy}}$	46.03%	111.29%	30.52% 57.58%	26.32%
Did participants think their partners got what they wanted?						
8	Simple difference between actual duration and participant's estimate of partner's desired duration	$A_{xy} - E_x(D_y)$	1.28	11.51	-0.09 2.76	1.00
9	Proportional difference between actual duration and participant's estimate of partner's desired duration	$\frac{A_{xy} - E_x(D_y)}{A_{xy}}$	0.68%	109.91%	-10.23% 16.36%	12.50%
10	Absolute value of the simple difference between actual duration and participant's estimate of partner's desired duration	$ A_{xy} - E_x(D_y) $	6.52	9.56	5.30 7.65	4.00
11	Absolute value of the proportional difference between actual duration and participant's estimate of partner's desired duration	$\frac{ A_{xy} - E_x(D_y) }{A_{xy}}$	39.37%	102.59%	24.76% 49.12%	23.81%
Did participants know what their partners wanted?						
12	Simple difference between participant's estimate of partner's desired duration and partner's desired duration	$E_x(D_y) - D_y$	-1.93	15.65	-3.91 0.01	-1.00
13	Proportional difference between participant's estimate of partner's desired duration and partner's desired duration	$\frac{E_x(D_y) - D_y}{A_{xy}}$	-14.54%	163.97%	-34.83% 6.13%	-4.55%
14	Absolute value of the simple difference between participant's estimate of partner's desired duration and partner's desired duration	$ E_x(D_y) - D_y $	9.38	12.66	7.79 10.87	5.00
15	Absolute value of the proportional difference between participant's estimate of partner's desired duration and partner's desired duration	$\frac{ E_x(D_y) - D_y }{A_{xy}}$	63.84%	151.68%	43.40% 80.18%	29.41%
Did participants think that they and their partners wanted the same thing—and were they right?						
16	Simple difference between participant's desired duration and participant's estimate of partner's desired duration	$D_x - E_x(D_y)$	1.85	9.21	0.71 2.95	0.00
17	Proportional difference between participant's desired duration and participant's estimate of partner's desired duration	$\frac{D_x - E_x(D_y)}{A_{xy}}$	14.34%	67.88%	5.35% 21.91%	0.00
18	Absolute value of the simple difference between participant's desired duration and participant's estimate of partner's desired duration	$ D_x - E_x(D_y) $	4.85	8.04	3.81 5.78	2.00
19	Absolute value of the proportional difference between participant's desired duration and participant's estimate of partner's desired duration	$\frac{ D_x - E_x(D_y) }{A_{xy}}$	29.11%	62.95%	20.77% 36.08%	12.50%
20	Absolute value of the simple difference between participant's desired duration and partner's desired duration	$ D_x - D_y $	10.27	13.10	8.61 11.82	6.00
21	Absolute value of the proportional difference between participant's desired duration and partner's desired duration	$\frac{ D_x - D_y }{A_{xy}}$	68.20%	149.79%	47.68% 84.62%	34.52%
When did conversations end?						
22	Absolute value of the simple difference between the conversation's duration and the midpoint between conversants' desired durations	$A_{xy} - \frac{D_x + D_y}{2}$	5.97	7.69	4.98 6.87	3.00
23	Absolute value of the proportional difference between the conversation's duration and the midpoint between conversants' desired durations	$\frac{ A_{xy} - \frac{D_x + D_y}{2} }{A_{xy}}$	38.80%	79.90%	28.04% 47.45%	22.22%

The actual duration of the conversation between a participant (Person X) and their partner (Person Y) is notated as A_{xy} , a participant's desired duration is notated as D_x and their partner's desired duration is notated as D_y , and a participant's estimate of their partner's desired duration is notated as $E_x(D_y)$. Proportional values are shown as percentages. 95% CIs for means were calculated with 10,000 replicates using the "boot" package in R (24). Note that the mean of a set of proportional differences is not necessarily equal to the mean of a set of differences expressed as a proportion, which is why the value shown in row 6 is not equal to the value shown in row 4 divided by the value shown in row 1.

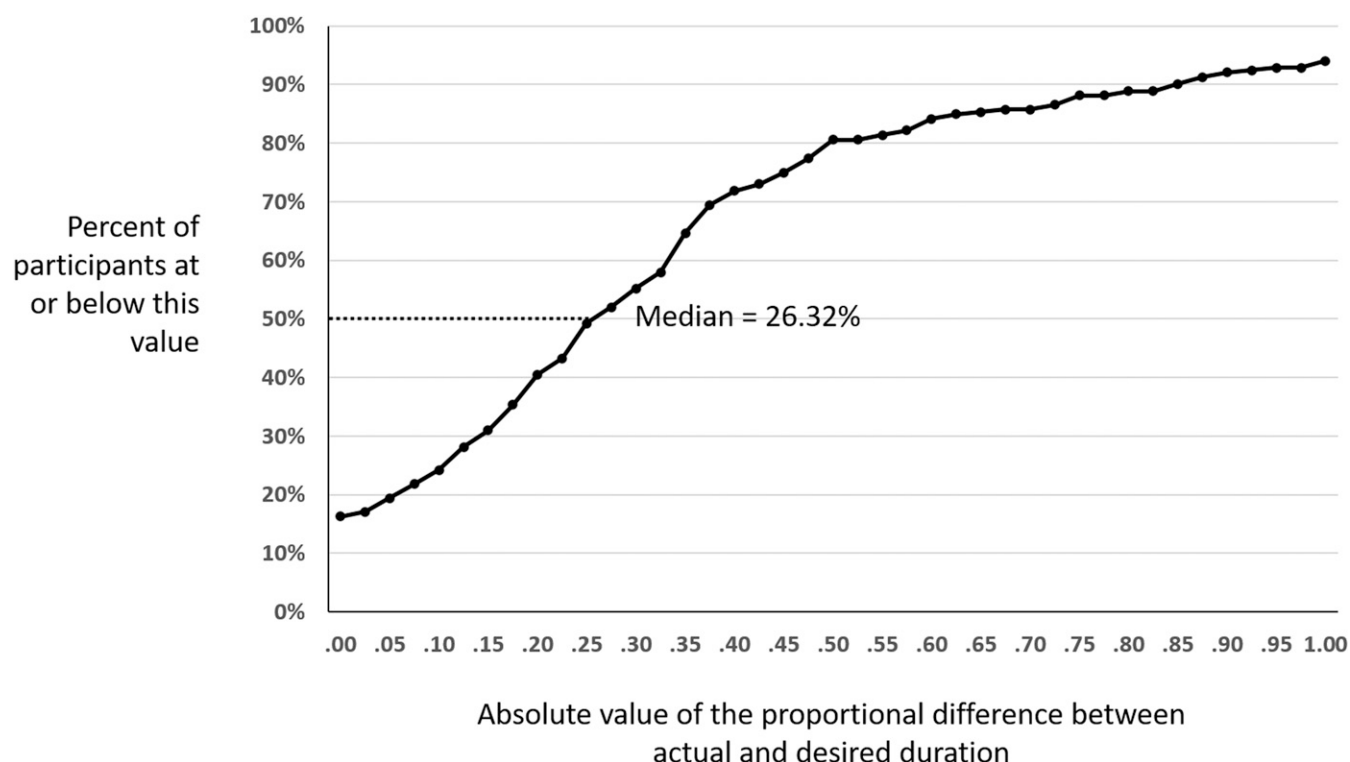


Fig. 2. Distribution of the absolute value of the proportional difference between actual duration and participant's desired duration in Study 2. This figure shows the 94.05% of participants whose x-axis values were ≤ 1 .

end. For those who answered yes (80.16%) we defined their estimated partner's desired duration as the minute the participant believed their partner felt ready for the conversation to end, and for those who answered no (19.84%) we defined their estimated partner's desired duration as the actual duration plus the number of additional minutes they believed their partner wished the conversation had continued. On average, participants thought that their partners wished the conversation had been 1.28 min or 0.68% shorter (Table 2, rows 8 to 9) than it was and 6.52 min or 39.37% (median = 23.81%) different than it was (Table 2, rows 10 to 11). In short, as in Study 1, participants did not come close to getting what they wanted and thought their partners did not come close either.

Did participants know what their partners wanted? Unlike Study 1, Study 2 allowed us to calculate the accuracy of participants' estimates of their partner's desires. On average, participants underestimated their partner's desired duration by 1.93 min or 14.54% of the conversation's duration (Table 2, rows 12 to 13). More importantly, participants incorrectly estimated their partner's desired duration by 9.38 min or 63.84% (median = 29.41%) of the conversation's duration (Table 2, rows 14 to 15). In short, participants' estimates of their partner's desires were highly inaccurate. Participants had very little idea what their partners really wanted.

Did participants think that they and their partners wanted the same thing—and were they right? Both Studies 1 and 2 allowed us to determine whether participants believed that they and their partners wanted the same thing, but unlike Study 1, Study 2 allowed us to determine whether their beliefs about the compatibility of their desires were accurate. They were not. On average, participants believed that their desired duration was longer than their partner's desired duration by 1.85 min or 14.34% of the conversation's duration (Table 2, rows 16 to 17). More importantly, participants believed that their desired duration differed from their partner's desired duration by 4.85 min or 29.11% (median = 12.50%) of the conversation's duration

(Table 2, rows 18 to 19) when in fact, they differed by an average of 10.27 min or 68.20% (median = 34.52%) of the conversation's duration (Table 2, rows 20 to 21).[†]

We compared the estimated and actual differences between conversants' desired durations using a linear mixed effects model with type of value (estimated versus actual) entered as a fixed effect and participants' group number entered as a random effect. A comparison of the simple differences shown in rows 18 and 20 of Table 2 revealed that on average, participants underestimated the discrepancy between their desired duration and their partner's desired duration by a considerable amount, $t(375) = -7.73$, $b = -5.39$, 95% CI = -6.76 , -4.02 ; $P < 0.001$. Specifically, the discrepancy between participants and their partners was more than twice as large as the participants and their partners thought it was. Similarly, a comparison of the proportional differences in rows 19 and 21 of Table 2 revealed that participants underestimated the discrepancy between their and their partner's desired durations by a considerable amount, $t(376) = -4.96$, $b = -39.14\%$, 95% CI = -54.62% , -23.65% ; $P < 0.001$. Specifically, the discrepancy between participants and their partners was again more than twice as large as the participants and their partners thought it was. In short, participants and their partners not only had highly incompatible desires but also did not realize just how incompatible their desires were.

When did conversations end? Incompatible desires are a problem. When conversants have incompatible desires, their conversations cannot end when both conversants want them to end, and indeed,

[†]We analyzed the absolute values of this difference but not the difference itself because such an analysis would be meaningless. Each participant was another participant's partner, and therefore if one participant contributed a positive difference, their partner had to contribute a negative difference of precisely the same magnitude, so the mean of these differences must be zero, that is, $(D_x - D_y) + (D_y - D_x) = 0$. In the next paragraph, we also omit a meaningless analysis of this kind.

in a mere 1.59% of the conversations did both conversants want to end at the same time and manage to do so ($A_{xy} = D_x = D_y$). If conversations did not end when both conversants wanted them to end, did they at least end when one of the conversants wanted them to end? Not very often. Just 29.37% of conversations ended when one of the conversants wanted them to end [$(A_{xy} = D_x) \vee (A_{xy} = D_y)$]. Is that because rather than ending when one of the conversants wanted to end, conversants instead “split their differences” and ended at the midpoint between their incompatible desires? No. For each dyad, we calculated the midpoint between the two conversants’ desires and then calculated the absolute proportional difference between that midpoint and the actual endpoint (Table 2, row 23). The mean of this difference was 38.80% of the duration of the conversation. On average, conversations did not end at the midpoint between conversants’ incompatible desires—and indeed, the majority of conversations did not end at any point between the conversants’ incompatible desires! In 46.83% of the conversations, both conversants wanted the conversation to end before it did, and in 9.52% of the conversations, both participants wanted the conversation to end after it did. Although we cannot say when conversations ended, we can say when they didn’t end: They didn’t end when the conversants wanted them to.

Discussion

Friends don’t usually have trouble picking a restaurant for lunch. If they both want pizza, they get pizza, and if one wants pizza and the other wants sushi, they make a choice. In one case, both friends get what they wanted, and in both cases, at least one friend gets what they wanted. Picking a restaurant is a coordination problem that friends solve easily because they often have compatible desires and they readily communicate their desires to each other. But imagine how vexing this coordination problem would be if friends almost never wanted to eat the same thing and almost always kept that fact from each other. Under those circumstances, a friend who loved pizza and a friend who loved sushi might end up eating liverwurst sandwiches—often, in silence, and to their mutual chagrin.

What rarely happens when choosing lunch may often happen over it. We analyzed nearly a thousand conversations between intimates and between strangers, and these analyses converged on a few robust conclusions. Foremost among them is that conversations do not end when conversants want them to end. Indeed, in our studies, conversations almost never ended when both conversants wanted them to end and infrequently ended when either conversant wanted them to end—and the difference between what conversants wanted and what conversants got was on average about half the length of the conversation itself. Why does this happen—and why does this matter?

Why This Happens. Our data suggest that two things conspired to produce this outcome. First, conversants almost always had incompatible desires. This is not a trivial fact. One might have expected conversation to be a “harmonizing” process that brings conversants’ desires into alignment and allows them to construct a mutual desire to end at roughly the same time. This is a reasonable conjecture for which our studies provide not one shred of support. In our studies, conversants rarely wanted the same thing, which made it a priori impossible for their conversations to end when both conversants wanted them to. From brief chats to lengthy discussions, from light-hearted banter to serious debate, from exchanges with strangers to exchanges with friends, it appears that when two humans talk, one almost always wants to stop talking before the other one does.

The second thing that conspired to produce the outcomes we observed in our studies is that our conversants not only wanted different things but also knew precious little about what their partners really wanted. There are several workable solutions to

the problem posed by incompatible desires, but most require conversants to have a firm understanding of the problem itself. For example, conversants with incompatible desires may wish to end midway between them. Alas, conversants in our studies would have found this quite difficult to do simply because they did not have accurate knowledge of their partner’s desires and therefore could not have known where “midway” was. Accurate knowledge not only allows conversants to minimize the problem of incompatible desires but, in some cases, it may eliminate the problem entirely. A conversant who wanted to stop talking might have become a conversant who wanted to keep talking if only they had known that their partner wanted to keep talking too. Conversation is often not a simple negotiation between people with independent desires but a coordination problem in which each person’s desire to continue depends in part on what they believe about the other person’s desire to continue. People often want to do whatever their partner wants to do, and their partner often feels the same way. Such coordination problems may seem intractable, but in fact they are fairly easy to solve when people can communicate honestly about their desires (“You feel like sushi, so no problem, we can get pizza next week”). But when it comes to ending ordinary conversations, honest communication is apparently in short supply. Because expressing a desire to end carries a significant risk of offending one’s partner, people may generally mask those desires when they arise and may instead wait for the conversation to pass a suitably ambiguous off-ramp (“Oh look, everyone is taking their seats...”). The irony, of course, is that by masking their desires, conversants are depriving each other of information that might lead them to want the same thing, or at least enable them to bridge the gap.

The social conventions that lead people to mask their true desires appear to be just as powerful in the living room as they are in the laboratory. One of the most striking things about the results of Studies 1 and 2 is how similar they are. Study 1 examined conversations that people had a day or so earlier with their families and friends in their homes and offices, and Study 2 examined conversations that people had moments ago with a stranger in a laboratory; and yet, with just a few exceptions, the two studies produced remarkably similar results. Our conversants were apparently no more likely to communicate their true desires to intimates than to strangers. The social conventions that lead people to mask their desires may be referred to as politeness when they govern behavior toward strangers and as kindness when they govern behavior toward intimates, but in both cases, they lead people to withhold information about when they want to stop talking. The similarity of the results from our two studies suggest that Study 1’s methodological limitations did not play a role in producing its results and that the results of both studies are not unique to one kind of conversation or one class of conversants. Future research will determine whether these results generalize to a wider range of human beings and social situations.

Why This Matters. The fact that conversations do not end when people want them to end may seem more like an oddity than a calamity. After all, what’s a few minutes between friends? In some cases, the answer is “Not much.” And yet, it isn’t difficult to imagine how the massive failures of coordination that our studies demonstrate could have serious consequences. For example, nearly 10% of the dyads in Study 2 did not get what they wanted because both conversants wanted to talk longer than they did. How much communion and connection does the world forego each day simply because hundreds of millions of people who want to keep talking to each other don’t recognize that fact and so terminate their interactions prematurely? And how many people live lives of quiet desperation simply because they tend to alienate their conversation partners by never quite knowing when it’s time to say goodbye? Social interaction is not a luxury;

it is critical to psychological well-being, physical health, and longevity (22), and conversation is its bread and butter. Humans may not live by bread alone, but they can surely starve without it. The more we learn about conversation—about how it begins and ends, runs and stalls, delights and disappoints—the better positioned we will be to maximize its benefits.

Materials and Methods

The data and code necessary for reproducing all analyses, tables, and figures are available at <https://osf.io/8k4aj/>.

Study 1: Participant Selection. We posted a request on Amazon Mechanical Turk for people to complete a survey in exchange for \$0.75. Those who responded had to complete a “captcha” in order to proceed to the first page of a survey, which contained a three-item multiple-choice test meant to determine whether the responder was an English-speaking human being who was familiar with American culture. The test required responders to demonstrate that they knew that children in kindergarten are usually 4 or 5 y old, an American ZIP code has five numbers, and eating turkey is not a tradition associated with Halloween. We collected 1,100 responses before 1,000 responders answered all three of these questions correctly and completed the survey.

After these 1,000 responders completed a consent form, we asked them to think back to the last conversation they had that was in person (not via phone or computer), with exactly one other person, and between 1 and 45 min in length. Eighty-six responders reported a conversation that did not have all these properties and were not allowed to participate. We also asked responders, “Can you remember who that conversation was with and what it was about?” Twelve responders reported that they could not and therefore were not allowed to participate. We also asked responders, “Do you remember approximately how long that conversation was?” which they answered by selecting one of three response options: yes, no, or I don’t remember. Twenty-three responders selected no or I don’t remember and therefore were not allowed to participate. We also asked responders whether there was “a point at which you felt ready for the conversation to end?” which they answered by selecting one of three response options: yes, no, or I don’t remember. Fifty-nine responders selected I don’t remember, and therefore they were not allowed to participate. Responders who were not allowed to participate answered alternate questions and were compensated for their time. The remaining 820 responders (369 female and 451 male, $M_{age} = 36.76$ ys; 77% White, 9% Black, 8% Asian, 3% Hispanic, 1% American Indian or Alaska Native, and 2% “more than one of the above”) were allowed to participate in Study 1.

Study 1: Measures. We asked participants whether there was a point during their conversation at which they had felt ready for it to end, which they answered yes or no. Those who answered yes were shown a list of whole numbers ranging from 0 to A_{xy} , inclusive. (The note for Table 1 provides a guide to our notation). We asked participants to select the number that best represented the point in the conversation at which they had first felt ready for it to end. Those who answered no were shown the same list of whole numbers as well as the phrase “more than 60” and were asked to select the number or phrase that best represented how much longer they would have “preferred the conversation continued.” Next, we asked participants whether they thought there was a point during the conversation at which their partner had felt ready for it to end, which they answered yes or no. Participants who answered yes were shown the measure described above and asked to estimate when their partner had first felt ready for the conversation to end, and participants who answered no were shown the measure described above and were asked to estimate how much longer their partner preferred it had continued.

Participants then answered several other questions, including questions about the purpose of their conversation, how their conversation had ended, whether it had been planned in advance, when it had occurred, the kind and duration of their relationship with their partner, how well they knew their partner, how close they felt to their partner, and how often they generally talked to their partner. These and all other questions are described in *SI Appendix*. In addition, participants encountered one “attention check” item that instructed them to select a specific response option from a list and then to type the word “tree” into a text box.

Study 1: Data Exclusions. Fourteen participants failed the attention check and their data were excluded from all analyses. This exclusion left 806 participants (367 female and 439 male, $M_{age} = 36.78$ ys, 78% White, 8% Black, 8% Asian,

3% Hispanic, 1% American Indian or Alaska Native, and 2% “more than one of the above”) in the data set.

Study 1: Additional Results. We asked participants “Which of these best describes the purpose of your conversation?” and asked them to choose one of five options. Analyses revealed that 44.04% of participants selected “Chat/hang out,” 28.04% selected “Solve a problem/make a decision together,” 20.47% selected “One of us needed something from the other (advice, information, a favor, etc.),” 2.11% selected “Argument,” and 5.33% selected “Other.” Analyses also revealed that 40.94% of participants reported that their conversation was terminated by external circumstances, and the remainder reported that it was not. Of that remainder, 71.43% of participants reported that they took the first step toward ending the conversation, and the rest reported that their partner took the first step. [This departure from 50% may mean that people mistakenly think conversations ended by their partners were ended by external circumstances or may mean that people mistakenly believe they played a greater role in terminating their conversations than did their partners (23)]. In addition, 86.85% of participants reported that their conversation was spontaneous, 12.28% reported that it was planned in advance, and 0.87% reported that they could not remember whether it was spontaneous or planned in advance. Finally, 50.12% of participants reported that their conversation had occurred earlier that day, 28.29% reported that it had occurred yesterday, 18.24% reported that it had occurred a few days ago, and 3.35% reported that it had occurred more than a few days ago. In short, nearly all conversations had one of just three general purposes, and nearly all were spontaneous and recent. The majority of conversations were terminated by the conversants, and interestingly, a large majority of conversants believed that they had taken the first steps to terminate them.

Analyses also revealed that 27.92% of participants conversed with a friend, 27.17% with a spouse or romantic partner, 24.07% with another family member, 9.68% with an acquaintance, 2.11% with a stranger, and 9.06% with someone who was none of these. We also asked participants how long they had known their conversation partner, and 46.40% of participants reported that they knew their partner “more than 10 years,” 17.25% reported that they had known their partner “between 5 and 10 years,” 24.94% reported that they had known their partner “between 1 and 5 years,” 6.95% reported that they had known their partner “between 30 days and 1 year,” 2.11% reported that they had known their partner “between 1 day and 30 days,” and 2.36% reported that “we had never met before our conversation.” On average, participants reported knowing their partner quite well ($M = 6.05$, $SD = 1.49$, on a seven-point Likert scale whose endpoints were marked 1 = not well at all and 7 = very well) and feeling fairly close to them ($M = 5.65$, $SD = 1.75$, on a seven-point Likert scale whose endpoints were marked 1 = not close at all and 7 = very close). Finally, we asked participants how often they talk to the person with whom they conversed, and 56.45% reported that they talked “daily/almost every day,” 27.67% reported that they talked “a few times each week,” 10.17% reported that they talked “a few times each month,” 2.85% reported that they talked “a few times each year,” and 2.85% reported that they talked “less than a few times each year.” In short, the vast majority of conversations were with intimates whom the participant had known for years and with whom the participant conversed quite often.

Study 2: Combining Data. We brought pairs of participants to the laboratory, asked them to talk until they wanted to stop, and then measured their beliefs about their conversation and their partner. In order to analyze the largest possible sample of conversations, we combined the data from three smaller studies. The procedures for these three studies were nearly identical, so for narrative purposes we have described them as a single study. In *SI Appendix*, we detail the relatively minor differences between the procedures for these studies, and we also perform separate analyses on the data from each of the three studies and show that each study produces the same general conclusions that our analysis of the combined data set does.

Study 2: Participant Selection. Participants were 366 people (225 female, 138 male, and 3 “other”; $M_{age} = 23.10$ y; 46% White, 26% Asian, 11% Black, 6% Hispanic, 9% “more than one of the above,” and 1% “other”) recruited from the Harvard University Psychology Department study pool and the Harvard Decision Science Laboratory study pool. Participants received either course credit or \$15 in exchange for their participation. It is worth noting that both study pools recruit from both student and nonstudent populations, which is why the mean age of our participants is considerably higher than the mean age of US college students.

Study 2: Procedure. Participants arrived at the laboratory in pairs and were seated at a small table in a quiet conference room. An experimenter explained that they were studying “how people have conversations” and instructed the participants to “talk about whatever you like, for as little time or as much time as you like, as long as it is more than one minute and less than 45 minutes. Whenever you’re ready to move on to the next part of the study, please come get me.” The experimenter explained that regardless of the conversation’s duration, both participants would remain in the laboratory for a full hour completing other tasks. This instruction was meant to ensure that participants had no extrinsic incentive to terminate their conversations. The conference room contained recording equipment, and participants were told that their conversation would be recorded but that they could request that the recording be stopped at any time or that the experimenter erase the recording after the conversation was over (which none did).

Participants who terminated their conversation before 45 min had passed notified the experimenter and were then escorted to individual cubicles where they completed a series of dependent measures. Participants who did not terminate their conversation before 45 min had passed were interrupted by the experimenter and then escorted to individual cubicles where they completed a series of dependent measures.

Study 2: Measures. We asked participants whether there was a point in the conversation at which they felt ready for it to end, which they answered yes or no. The format of subsequent measures differed slightly across the three smaller studies that constitute Study 2. In one of the smaller studies, participants who answered yes were asked to indicate the point at which they first felt ready for the conversation to end by providing a number between 0 and A_{xy} , inclusive, and participants who answered no were asked how many additional minutes they wished the conversation had continued by providing a number. In the other two smaller studies, participants who answered yes were shown a list of whole numbers ranging from 0 to A_{xy} and were asked to select the number that best represented the point at which they had first felt ready for the conversation to end, and participants who answered no were shown a list of options that ranged from “1 minute longer” to “more than 60 minutes longer” in one min increments and were

asked to select the option that best represented how much longer they wished the conversation had continued.

Next, participants were asked whether they thought there was a point during the conversation at which their partner had felt ready for it to end, which they answered yes or no. Participants who answered yes were shown the measure described above and were asked to estimate when their partner had first felt ready for the conversation to end, and participants who answered no were shown the measure described above and were asked to estimate how much longer their partner preferred it had continued. We also asked participants additional questions that are fully described in *SI Appendix*.

Study 2: Data Exclusions. Participants were required to talk for just 1 min. To our surprise, 57 of the 183 dyads spoke for the full 45 min allotted and the experimenter had to terminate their conversations. Because these participants did not end their own conversations, it is unclear whether the actual length of their conversations would have been longer, shorter, or equivalent to their desired lengths had they been allowed to continue. As such, we excluded these participants from all analyses. In *SI Appendix*, we compare the results of each analysis with and without these participants and show that the exclusion of these participants does not meaningfully influence the results. These exclusions left 252 participants (157 female, 92 male, and 3 “other,” $M_{\text{age}} = 23.10$ ys, 46% White, 31% Asian, 9% Black, 6% Hispanic, 8% “more than one of the above,” and 1% “other”) in the data set. Finally, one participant who identified as White and neither male nor female did not provide an estimate for their partner’s desired duration and therefore was not included in any analyses involving that measure.

Data Availability. The data and code necessary for reproducing all analyses, tables, and figures are available at the Open Science Framework at <https://osf.io/8k4aj/>.

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