

RUNNING HEAD: HELLO STRANGER

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Hello, stranger?

Pleasant conversations are preceded by concerns about starting one

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Abstract

Connecting with others makes people happier, but strangers in close proximity often ignore each other. Prior research (Epley & Schroeder, 2014) suggested this social disconnection stems from people misunderstanding how pleasant it would be to talk with strangers. Extending these prior results, in a field experiment with London-area train commuters, those assigned to talk with a stranger reported having a significantly more positive experience, and learning significantly more, than those assigned to a solitude or control condition. Commuters also *expected* a more positive experience if they talked to a stranger than in the solitude or control conditions. A second experiment explored why commuters nevertheless avoid conversation even when it is generally pleasant. Commuters predicted that *trying* to have a conversation would be less pleasant than actually having one because they anticipated that others would be uninterested in talking. These experiments clarify the precise aspects of social interaction that may be misunderstood. People may avoid pleasant conversations with strangers because of miscalibrated concerns about starting them.

Keywords: conversation; communication; social cognition; social motivation; wellbeing

In an effort to encourage more conversation on the London Tube, a train rider in 2016 began distributing badges through the London Underground network emblazoned with the question, “Tube Chat?” Soon afterward, a newspaper claimed that the campaign “provoked horror among London commuters,”¹ while a rival group launched a Twitter account called “Shut Up Tube Chat.”² Volunteers from the Shut Up Tube Chat campaign handed out anti-chat badges that read, “Don’t even think about talking to me,” at the Liverpool Street tube station one Friday morning.

Although Londoners have a reputation for being reserved (Boyce, 2012), prior research suggests that their “horror” at imagining a conversation with strangers may be miscalibrated. Human beings are inherently social, such that connecting with others—even with complete strangers—reliably increases people’s moods (Dunn, Biesanz, Human, & Finn, 2007; Fleeson, Malanos, & Achille, 2002; Gunaydin et al., 2020; McNiel & Fleeson, 2006; Sandstrom & Dunn, 2014; Zelenski, Santoro, & Whelan, 2012; Zelenski et al., 2013). Acting more extroverted in a social setting also increases people’s positive mood, even among self-reported introverts, in both laboratory settings (Fleeson et al., 2002; McNiel & Fleeson, 2006; McNiel, Lowman, & Fleeson, 2010; Zelenski et al., 2012), and weeks-long field interventions (Margolis & Lyubomirsky, 2020). In experiments on commuter trains, even people assigned to talk to a stranger do not report experiencing “horrific” outcomes but instead report having a significantly more positive commute than those assigned to keep to themselves in solitude or do whatever they normally do (Epley & Schroeder, 2014).

¹ <https://www.theguardian.com/uk-news/2016/sep/29/tube-chat-campaign-provokes-horror-among-london-commuters>

² <https://www.bbc.com/news/uk-england-london-37521090>

If connecting with a stranger can make a commute more pleasant than keeping to oneself, then why do people often seem so reluctant to do it, like the Londoners wearing “don’t talk to me” badges? One possibility is that people’s expectations about the outcomes of social interactions are miscalibrated, such that they underestimate the positive consequences of connecting with a stranger. In one laboratory experiment, participants expected to enjoy talking to their own romantic partner more than talking to an opposite-sex stranger, but these participants actually enjoyed talking to these two targets equally (Dunn et al., 2007). In a mix of workshops and week-long field experiments (Sandstrom & Boothby, 2020), participants asked to talk with strangers consistently underestimated how much they would like their partners, how much they would enjoy their conversations, and how competent they would be in carrying on their conversations. And in field experiments on trains and busses (Epley & Schroeder, 2014), Chicago-area commuters expected that they would have a less pleasant commute if they connected with a stranger in conversation than if they sat in solitude or had their typical commute. In fact, participants randomly assigned to do one of these three activities actually reported the opposite experience from these expectations, having a more positive train or bus ride when they connected with a stranger than when they kept to themselves or had their typical commute. These results suggest that even in places where connecting with strangers seems to be actively discouraged, such as in Chicago or even London, connecting with strangers may be more pleasant than the solitude people may be choosing to experience instead. However, experiments testing exactly which aspects of social interaction people might misunderstand, from starting a conversation to carrying it out to wrapping it up, are limited. People might misunderstand the outcomes of social interactions because they misunderstand how interested

others are in engaging with them in the first place, or because they misunderstand how an interaction will unfold once it has started.

Here we report a larger-scale conceptual replication and extension of Epley and Schroeder (2014) using a new (and perhaps more reserved) sample of British participants commuting in and out of London. We made three meaningful changes to the original experiments: we significantly increased our sample size, we measured expectations and experiences within-participants rather than between-participants to enable direct comparisons between them, and we asked participants in the conversation condition to simply talk with another commuter rather than to “try to make a connection” and “get to know” a fellow commuter.

This replication effort is valuable for testing the robustness of the original experimental results in a different culture. Recent research using an experience sampling method found that people who reported being in the presence of strangers also reported being less happy than they were at the preceding measurement time, leading the authors to conclude “that interactions with strangers are, on average, unpleasant” (Quoidbach et al., 2019, pg. 9). However, this experience sampling research could not reliably assess whether people were actually interacting with these strangers in a conversation or merely in the presence of strangers (which could be confounded with other experiences that might be relatively unpleasant, such as sitting in a waiting room with strangers at a doctor’s office). By experimentally manipulating whether people actually interact with strangers in conversation or not, we can draw causal inferences about the consequences of engaging with strangers for wellbeing. Experiment 1 also serves to test a potential alternative interpretation of the original experiments. Specifically, by changing the experimental instructions to simply ask participants to have a conversation, we test a possible alternative interpretation in

the original experiments that connecting with strangers in public is pleasant only when explicitly instructed to try to make a connection (see Quoidbach et al., 2019).

In Experiment 2, we report a novel test between two hypotheses about the psychological barriers that might make people reluctant to connect with strangers even when it would be more pleasant than what they might otherwise be doing (see also Sandstrom & Boothby, 2020). One hypothesis is that people think that *initially engaging* a stranger will be relatively unpleasant because social norms or observable cues suggest others are uninterested in talking. In contexts without obvious cues that others are interested in engaging in conversations, such as on commuter trains or other public spaces, uncertainty about others' interest or willingness to engage in conversation could keep people from trying to start a conversation out of fears of being rejected or being impolite. This reluctance to try to start a conversation could then lead most people to avoid even trying to engage a stranger in conversation, thereby creating the perception that others are unwilling or uninterested in talking based on a tendency to infer that others' mental states match their observed actions (i.e., the correspondence bias; Gilbert & Malone, 1995). Indeed, commuters on trains and busses in Chicago believed that they were personally more interested in talking with other commuters than other commuters were in talking with them (Epley & Schroeder, 2014; Experiment 3). Underestimating others' interest in engaging in conversation could create a barrier to starting conversations with strangers more often in daily life.

A second hypothesis is that people think *enacting* a conversation with a stranger will be potentially unpleasant, such that people think the conversation itself will be unpleasant and hence worth avoiding. Only one experiment we know of has tested this hypothesis directly (Epley & Schroeder, 2014; Experiment 3), and finds no significant evidence to support it. Participants in

this experiment imagined having either a positive conversation with an interesting person, a negative conversation with an uninteresting person, or simply a conversation with an unspecified stranger. If participants expected that the conversation itself would be unpleasant, then those who imagined having a conversation with an unspecified stranger would anticipate experiences closer to the negative interaction condition than to the positive interaction condition. Instead, the results from this experiment indicated that participants' anticipated conversations with an unspecified stranger were more similar to the positive interaction condition, suggesting that people might not expect that actually having a conversation would be unpleasant.

To test between these two hypotheses, we ask people to predict how they would feel when *trying* to have a conversation with a stranger compared to how they would feel *actually having* a conversation. If the psychological barrier to talking with strangers stems from fears of engaging others in conversation, then people should expect a more negative experience when they imagine *trying* to have a conversation (because one could be rejected) than when they expect to actually have a conversation. If, however, the barrier to talking with strangers stems from anticipating a negative conversation, then people could expect similarly negative experiences whether trying to talk or actually talking, or even anticipate a less negative experience when trying to talk because a potentially unpleasant conversation might be avoided.

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in each study. Data files, surveys, and preregistrations for both experiments can be found online [https://osf.io/cd86s/?view_only=8b3ad7213eb6457399f6cf066a82d24a].

Experiment 1: Talking in London

We asked train commuters either going into London (in the morning) or out from London (in the evening) to talk with a fellow passenger on the train, sit in solitude, or do whatever they

normally do. We hypothesized that commuters who talked with a fellow passenger would report a more positive commute than those who sat in solitude or did what they normally do (which casual observation confirms typically involves some amount of sitting in solitude). We also hypothesized that participants' expectations would be systematically miscalibrated, such that people would expect that talking would be relatively less pleasant than keeping in solitude, leading them to underestimate how positive it could be to connect with a stranger. In addition to measuring mood, we measured how much participants reported learning on their commute and how productive they found their commute to be, to assess additional benefits and costs that might come from connecting with strangers. Finally, we measured contextual and dispositional factors that could moderate participants' expectations or experiences, including trait extraversion, demographic characteristics, commute length, and normal commuting behavior.

Method

We preregistered our methods, predictions, and analysis plan for this experiment at <https://aspredicted.org/blind.php?x=ki6i24>. Full procedural details are described in the Supplemental Materials.

Participants. We targeted at least 300 participants, but continued collecting data through scheduled shifts after we reached that point. In total, we recruited 466 individuals to participate in exchange for a 10£ Starbucks gift card from four public transport stations in the London area: Liverpool Street Station, Cambridge, Chelmsford, and Colchester. Of these, 383 completed the full survey³ (82.19% response rate overall; *Age* = 39.14 years, *SD* = 11.72⁴; 60.31% male). The

³ One of these participants only completed the post-survey (not the pre-survey) but we include their post-survey in the analysis.

⁴ Two participants did not report age; two participants in the analyzed sample reported being below 18 years old (15 years old and 17 years old).

response rate did not vary significantly across experimental conditions, $\chi^2 (n = 466) = 3.07, p = .215$. See Supplemental Table S1 for sample characteristics by experimental condition.

Procedure. This experiment utilized a 2 (survey timing: pre-commute or post-commute) \times 3 (instruction condition: conversation, solitude, or control) experimental design with repeated measures on the first factor.

Two or more experimenters stood at a train platform at one of four pre-determined London public transportation stations between the hours 5:30 to 9:30 am (morning) and 4:00 to 7:00 pm (evening) recruiting participants for an experiment on commuting. The experimenters recruited participants when the next train was at least 7 minutes out from arrival to ensure that sessions would not be interrupted by incoming trains. The experimenter enrolled anyone who agreed to participate after learning that it would require 5 minutes to complete an online survey before and after their commute.

Once enrolled, experimenters randomly assigned participants into one of three experimental conditions: conversation, solitude, or control. Experimenters asked participants to take a seat away from the larger crowd of people waiting to ensure instructions could be communicated effectively. Commuters received a printed card with their condition instructions (see Supplemental Materials for full text), which the experimenter also read aloud to them to ensure comprehension.

The *conversation* condition instructions were:

“On your commute this morning, please try to strike up a conversation with a fellow commuter. You can talk to anyone you want about anything you wish. For example, you might start by asking someone where they live and how long they have lived there, what they do for a living, or what they think about a particular news story. You can then give background about yourself, where you live, what you do for a living, or what you think about a particular news story. Try in whatever time you have to get to know this person a little bit, and let them get to know you a little. You can talk to this person for as long or as little as you would like, although it would be best if you could continue the

conversation for as long as the conversation naturally allows. You should try to use your commute this morning to have a conversation.”

The *solitude* condition instructions were:

“On your commute this morning, please do not engage anyone in conversation. Instead, take this time to sit alone with your thoughts. You can think about whatever you have going on in the day, or just let your mind wander. You should try to use your commute this morning to have some time alone.”

The *control* condition instructions were:

“On your commute this morning, please do whatever you would normally do. You may choose to talk, write, read, work, sit quietly, sleep or any other activity you typically do. You should try to use your commute this morning to do what you would normally do.”

The experimenter then asked if the participant was comfortable following the instructions. If a participant indicated they were not comfortable, the experimenter reiterated the importance of following the instructions but allowed them to leave the experiment if they no longer wanted to continue. Overall, 5.58% of commuters dropped out at this point (11.18% in the conversation condition, 4.14% in the control condition, 1.25% in the solitude condition).

Participants then opened the initial survey on their phone before starting their commute.⁵ When finished, the experimenter asked participants to keep the survey open so they could complete the second half after their commute. Participants were told they would receive half of their compensation for completing the first survey and the rest for completing the second survey. The experimenter asked for the participant’s phone number in order to send a text reminder to complete the second survey. Participants then boarded their train when it arrived and completed the experiment on their own.

Pre-commute survey. Participants first reported their normal commuting behavior: “What do you normally do during your commute? Please mark all options that apply” (talk to someone, talk/socialize on a computer/phone, read, sleep, think (by yourself), work, or other).

⁵ Some participants (2.35%) did not have a phone. These participants used the experimenter’s phone instead and received a link for where they could complete the survey when they were at a computer.

Participants then reported their expectations about their commute on five items: 1. How happy do you think you will feel after your commute today, compared to normal?; 2. How sad do you think you will feel after your commute today, compared to normal?; 3. How pleasant will your commute be today, compared to normal? 4. How much do you think you will learn on your commute today, compared to normal? 5. How productive will you be during your commute today (that is, how much will you accomplish), compared to normal? The response scale for the happy, sad, pleasant, and productive items included 7 scale points that ranged from -3 (*Significantly less happy/sad/pleasant/productive*) to 3 (*Significantly more happy/sad/pleasant/productive*). The response scale for the learning item included 7 scale points that ranged from -3 (*Learn significantly less*) to 3 (*Learn significantly more*).

Commuters then completed the 8-item *extraversion* subscale from the Big 5 Personality Inventory (John, Donahue, & Kentle, 1991; e.g., “I see myself as someone who is talkative”; “I see myself as someone who is full of energy,” $\alpha = .876$) on 5-point scales ranging from -2 (strongly disagree) to 2 (strongly agree), and entered demographic information (gender, age, and ethnicity).

Post-commute survey. Participants first reported their *actual commuting behavior*: “What did you actually do during your commute? Please mark all options that apply” (talked to someone, talked/socialized on a computer/phone, read, slept, thought (by yourself), worked, or other). Participants then reported their *actual experience* on the same five items measured in the pre-commute survey on the same response scales.

Participants reported demographic information about one of their fellow commuters: 1. Age (older than me, younger than me, about the same age as me, not sure); 2. Gender (female, male, not sure); 3. Race (same race as me, different race than me (please report), not sure).

If participants reported talking to someone, they reported these demographic features for “the person with whom you spoke today.” If participants reported that they did not talk to someone, they reported these demographic features about “the person who sat closest to you today.”

We also asked the participants who reported talking to someone four items about their conversation experience: 1. For approximately how long did you speak to the person? (free response); 2. What did you talk about? (free response); 3. How interesting was the conversation with the person? (0 = *not at all interesting*; 4 = *very interesting*); 4. What is your overall impression of the person? (-3 = *very negative*; 3 = *very positive*).

Finally, the post-commute survey included several exploratory questions. Participants reported how likely they were “to have a conversation with someone on [their] commute tomorrow” (0 = *not at all likely*; 4 = *very likely*), whether someone sat next to them during their commute (1 = *yes*, 2 = *no*; sample $M = 1.30$, $SD = 0.46$), how the commute made them feel (free response), and the duration of their commute (free response).

Results

Attrition. Most participants (91.6%) reported following the experimental condition instructions, although this figure varied by experimental condition such that fewer reported following instructions in the conversation condition (78.0%) than in the solitude (97.1%) and control (100%) conditions, $\chi^2 (n=383) = 47.22, p < .001$.⁶ All of the following analyses include all participants in each condition, regardless of whether they reported following the instructions or not (i.e., intent-to-treat analyses). Reported effects are consistently larger when analyses are

⁶ We computed how many participants followed the commuting instructions that they were given based on what they reported actually doing during their commute (i.e., the first item in the post-commute survey). Participants who reported “talking to someone” were counted as following the instructions in conversation condition but as not following the instructions in the solitude condition; we coded all participants in the control condition to have followed instructions.

restricted to only participants who followed the experimental instructions (i.e., treated analyses; See Supplemental Materials).

Positivity. As preregistered, we computed the expected and experienced commute positivity by averaging happiness, sadness (reverse-scored), and pleasantness into a composite variable ($\alpha = .85$). A 2 (survey timing: pre-commute vs. post-commute) \times 3 (condition: conversation, solitude, or control) mixed model ANOVA on positivity yielded significant main effects of survey timing, $F(1, 379) = 5.19, p = .023, \eta_p^2 = 0.01$, and condition, $F(2, 379) = 16.63, p < .001, \eta_p^2 = 0.08$, qualified by the predicted interaction, $F(2, 379) = 3.09, p = .047, \eta_p^2 = 0.02$ (Figure 1).

Consistent with our hypotheses, participants' actual experiences varied by experimental condition, $F(2, 379) = 12.59, p < .001, \eta_p^2 = 0.06$. Specifically, participants reported having a significantly more positive commute in the conversation condition ($M = 0.89, SD = 0.98$) than in either the solitude condition ($M = 0.35, SD = 0.97$), $t(263) = 4.44, p < .001, d = 0.55$, or the control condition ($M = 0.41, SD = 0.91$), $t(243) = 3.92, p < .001, d = 0.50$. The difference between the solitude and control conditions was nonsignificant, $t(254) = -0.50$. These findings appear to be robust: In an analysis that controlled for participant extraversion, participant and partner demographic matches (same age, gender, and race), commute duration in minutes, and normal commuting behaviors, the effect of being in the conversation condition on rated positivity of actual commute remained statistically significant compared to the solitude and control conditions, $ps < .001$.

Inconsistent with our hypotheses, participants also expected the same overall pattern of results across conditions before their commute, $F(2, 379) = 13.62, p < .001, \eta_p^2 = 0.07$, expecting to have a more positive commute in the conversation condition ($M = 0.73, SD = 0.90$) than in the

solitude condition ($M = 0.40$, $SD = 0.79$), $t(263) = 3.11$, $p = .002$, $d = 0.38$, or the control condition ($M = 0.19$, $SD = 0.71$), $t(243) = 5.06$, $p < .001$, $d = 0.65$.

The significant interaction between survey timing and condition on positivity indicates that participants' expectations differed from their actual experiences. As predicted, participants significantly underestimated how positively they would feel in the conversation condition, *paired* $t(126) = -2.04$, $p = .047$, $d = -0.17$. Unexpectedly, participants also significantly underestimated how positive they would feel in the control condition, *paired* $t(117) = -2.38$, $p = .019$, $d = -0.27$. Expectations did not differ significantly from reported experiences in the solitude condition, *paired* $t(137) = 0.69$, $p = .490$, $d = 0.06$. Although we observed the predicted interaction between survey timing and condition on positivity, with participants in the conversation condition underestimating the positivity of their commute, the interaction did not reflect the hypothesized pattern of results because participants did not expect to have a less positive experience in the conversation condition than in the solitude and control conditions.

Productivity and learning. We conducted the same 2×3 ANOVAs on predicted and actual productivity and learning during the commute. Consistent with results reported in Epley and Schroeder (2014), we observed no significant main effects or interaction on productivity, $F_s(2, 379) < 2$, $p_s > .15$, $\eta_p^2 = 0.12$, such that participants both expected and reported learning more in the conversation condition than in the control condition, $t(243) = 4.20$, $p < .001$, $d = 0.54$, or the solitude condition, $t(263) = 5.88$, $p < .001$, $d = 0.73$. Neither expected nor reported learning differed between the control and solitude conditions, $t(254) = -1.47$, $p = .143$, $d = 0.18$.

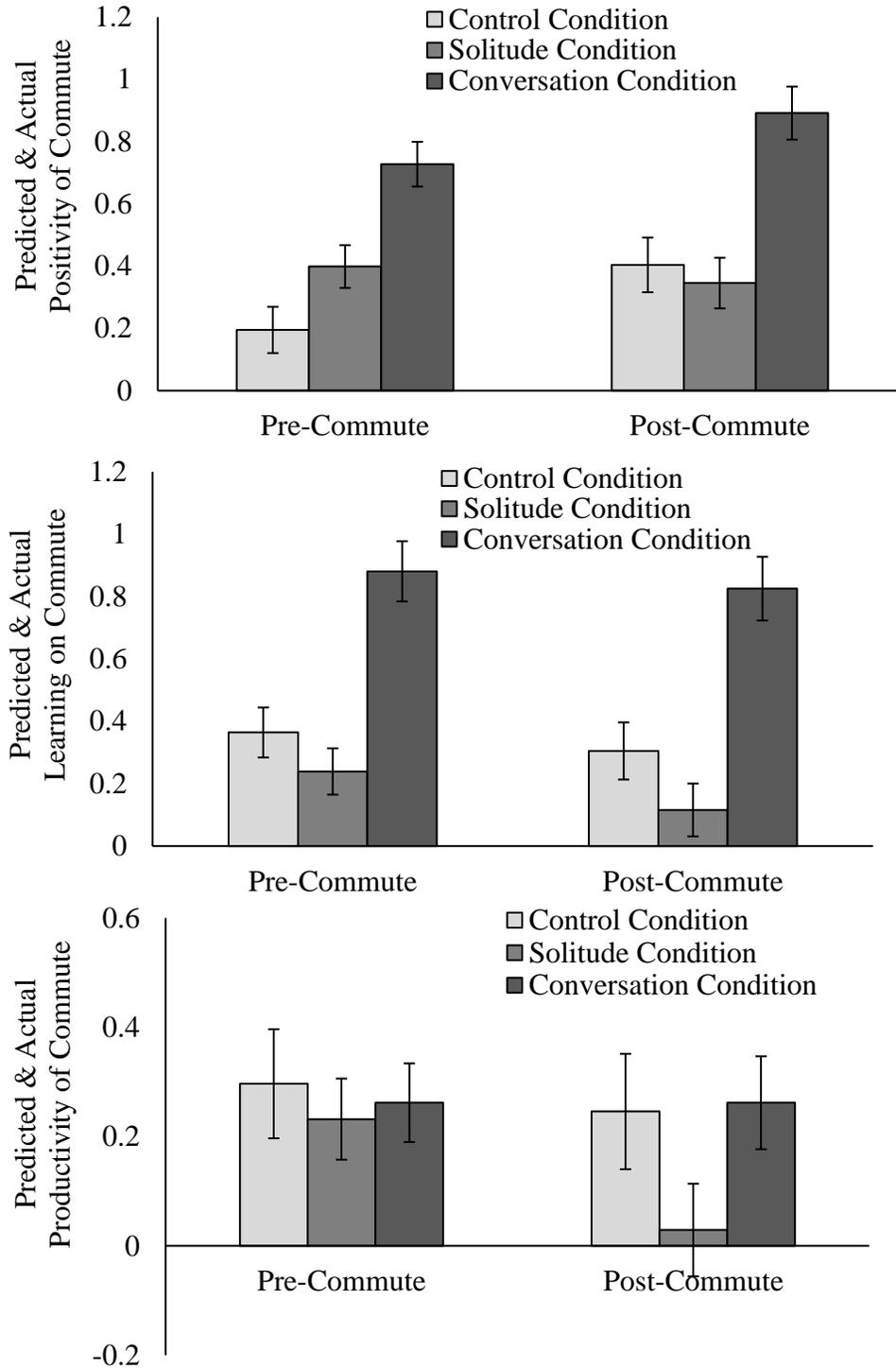


Figure 1. Predicted and actual positivity of commute (top panel), learning during commute (middle panel), and productivity of commute (bottom panel) by experimental condition (control, solitude, conversation) in Experiment 1. Error bars represent standard error around the mean.

Likelihood of future conversations. Only 14.4% of participants in this experiment, across conditions, reported regularly talking to other commuters on the train. If misunderstanding the consequences of social interaction creates a barrier to talking with others more often, then those who have conversations should report being more interested in having conversations in the future compared to those who do not have conversations. Consistent with this possibility, we observed a significant effect of condition on the reported likelihood of having a conversation on their commute the next day, $F(2, 380) = 17.76, p < .001, \eta_p^2 = 0.09$, such that participants in the conversation condition reported being more likely to talk again ($M = 1.46, SD = 1.23$) than those in the solitude condition ($M = 0.89, SD = 1.27$), $t(263) = 3.73, p < .001, d = 0.46$, and the control condition ($M = 0.58, SD = 1.0$), $t(243) = 6.11, p < .001, d = 0.78$. Unexpectedly, participants in the solitude condition also reported being more likely to talk the next day than those in the control condition, $t(254) = 2.13, p = .034, d = 0.27$, perhaps because we asked them to explicitly avoid having a conversation on the day of the study itself and hence may have expected to be slightly more likely to talk the following day.

Exploratory analyses. We conducted five exploratory analyses on the commuters who reported actually talking ($N = 99$) to better understand the nature of the conversations.

Conversation experiences and personal characteristics. First, to better understand participants' experiences talking with a stranger, we examined the correlations between actual commute experiences (positivity, learning, and productivity), predicted commute experiences on the same variables, and the misprediction of experiences with characteristics of participants (extraversion), characteristics of participants' conversations (e.g., length, interestingness), and participants' demographics (gender, age, race) among the commuters who reported talking. As shown in Table 1, expected and experienced positive mood in the conversation condition was

associated with greater extraversion, longer conversations, more interesting conversations, and more positive impressions of the conversation partner. The misprediction of positive mood was only associated with longer conversations, more interesting conversations, and more positive impressions of the conversation partner. Actual learning was positively associated with longer and more interesting conversations, more positive impressions of the conversation partner, and a larger age gap between conversationalists, whereas expected learning was associated with more interesting conversations and higher impressions of partner, and mispredictions in learning were associated with longer and more interesting conversations. Finally, expected and experienced productivity was not associated with any of the measured variables. In general, the longer participants' conversations, the more they underestimated their positive experience.

Table 1

Correlations Between Predicted and Experienced Conversation Experiences and Participant and Partner Characteristics Among Participants Who Reported Talking During their Commute in Experiment 1 ($N = 99$)

	Extraversion	Speaking duration	Interesting conversation	Impression of partner	Same age	Same gender	Same race
Predicted – Experienced Positivity (Diff Score)	.014	-.266**	-.238*	-.263**	.022	.099	.196
Predicted – Experienced Learning (Diff Score)	-.033	-.356**	-.319**	-.103	.139	.011	.144
Predicted – Experienced Productivity (Diff Score)	.129	.086	.027	-.002	-.179	-.083	-.048
Predicted Positivity (Pre-Commute)	.319**	.186	.280**	.294**	-.069	.024	.080
Predicted Learning (Pre-Commute)	.150	.166	.251*	.266**	-.077	-.086	.056
Predicted Productivity (Pre-Commute)	.152	.193	.185	.102	-.035	-.030	-.036
Experienced Positivity (Post-Commute)	.281**	.390***	.454***	.486***	-.081	-.060	-.089

Experienced Learning (Post-Commute)	.156	.518***	.555***	.344***	-.213*	.006	-.098
Experienced Productivity (Post-Commute)	.040	.120	.169	.110	.137	-.039	.007

Notes. * $<.05$, ** $<.01$, *** $<.001$. A higher difference score means more overestimation (or less underestimation) of positivity, learning, or productivity. We additionally examined correlations between experienced and predicted positivity, learning, and productivity pre- and post-commute among extraversion levels of participants in the control and solitude conditions; no correlations achieved statistical significance at the $p < .05$ level.

Conversation partners. Second, we tested which variables predicted partner characteristics (i.e., to *whom* participants talked) in a series of linear regression analyses. There were no effects of participants' own demographics or extraversion on the demographics of their conversation partner except that female participants were more likely to talk with other females (73%) than males, whereas male participants were similarly likely to talk with females (50.8%) and males, $\eta^2(1, 98) = 4.68, p = .031$.

Gender. Third, to identify any effects of gender, we conducted a series of 2 (own gender: male, female) \times 2 (partner's gender: male, female) ANOVAs on predicted and experienced positivity, learning, and productivity of commute after talking. No statistically significant effects emerged ($ps > .110$) except that females predicted that they would learn more ($M = 1.26, SE = 0.16$) than males ($M = 0.82, SE = 0.11$), $F(1, 94) = 4.99, p = .028, \eta_p^2 = 0.05$.

Selection. Fourth, to examine potential selection effects between those who reported following our instructions ($N = 99$) and those who did not ($N = 28$) in the conversation condition, we compared these two groups on predicted positivity, learning, and productivity, participant and partner demographic characteristics, participant extraversion, and commute duration. No statistically significant effects emerged on any of these variables, $ts(125) < 1.92, ps > .057, ds < 0.34$, except for target gender, whereby participants who talked were more likely to talk with a female ($M = 0.59, SD = 0.50$) whereas the people who did not talk were more likely to report

sitting next to a male ($M = 0.29$, $SD = 0.46$), $t(125) = 2.89$, $p = .005$, $d = 0.52$. These results suggest that following instructions in the conversation condition was not driven by characteristics about the participants themselves but rather may have been driven the context these participants found themselves in, such as sitting next to a man or potentially not sitting close to anyone at all. In their open-ended comments, those who did not follow instructions in the conversation condition reported difficulty finding someone to talk to, rather than being rejected when they tried to talk with someone. Difficulty finding a conversation partner could reflect an uncrowded train, or mistaken perceptions of others' interest in talking if the participant had tried (such as from seeing others wearing headphones; see Appendix A for participants' own explanations). We could not conduct similar analyses in the solitude condition because few participants reported not following instructions.

Finally, additional analyses indicated participants who followed instructions in the conversation condition reported experiencing a more positive commute ($M = 1.02$, $SD = 1.02$) than participants who did not follow the instructions ($M = 0.37$, $SD = 0.62$), $t(125) = 3.21$, $p = .002$, $d = 0.57$, and also reported learning more after their commute ($M = 0.96$, $SD = 0.97$) than participants who did not follow the instructions ($M = 0.36$, $SD = 0.56$), $t(125) = 3.14$, $p = .002$, $d = 0.56$. We observed a nonsignificant difference in reported productivity between those who followed instructions in the conversation condition and those who did not, $p = .598$. Even within the conversation condition, those who talked with a stranger had a more positive commute than those who, for whatever reason, did not. Note that those who did not follow instructions in the conversation condition experienced commutes more similar, on average, to those in the solitude and control conditions who likewise were typically not talking with others.

Discussion

Consistent with prior research, London-area train commuters, who do not have a reputation for being especially social, nevertheless reported having a more positive commute after being randomly instructed to strike up a conversation with a stranger than after being asked to keep to themselves in solitude or do whatever they normally do. We observed no corresponding negative consequences of experiencing a less productive commute. Inconsistent with prior research, however, commuters who were instructed to imagine talking to a stranger did not anticipate a less positive commute than those in the control or solitude conditions. Although participants in the conversation condition significantly underestimated how positive their commute would be, they also expected that it would be more positive overall than their commute in the solitude and control conditions. This is surprising both because this result diverges from prior research, and because conversations between strangers are so rare on these commuter trains.

One potentially important difference in the instructions from Epley and Schroeder (2014) is that participants in the current experiment imagined successfully following the instructions that they had been given and then reported how they expected to feel following the experience.⁷ For instance, in the conversation condition, participants imagined having a conversation with a fellow commuter and then reported how they expected to feel afterwards. In contrast, the instructions in Epley and Schroeder (2014) asked commuters to imagine trying to enact the experimental instructions (e.g., “imagine *trying* to have a conversation”) and then to report how they expected to feel, in each of the three experimental conditions. We theorized that *trying* to have a conversation calls to mind the act of engaging someone to start a conversation, whereas successfully following the instructions would focus more on the enactment of the conversation

⁷ This change to the instructions was unintentional. Without noticing, we worked from a file containing an early version of instructions rather than the final instructions actually used in the experiments.

itself. Prior research (Epley & Schroeder, 2014, Experiment 3) indicated that people might be reluctant to connect with strangers because they underestimate how interested others are in talking with them, rather than because they imagine having an unpleasant conversation with another person. If initially engaging others in conversation is the key psychological barrier that creates reluctance to talk with strangers, then instructing participants to imagine trying to talk could lead them to expect a more negative experience than instructing them to imagine actually talking. We test this possibility in Experiment 2.

Experiment 2: Predictions About Trying to Converse or Successfully Conversing

Commuters in Experiment 2 reported how they expected to feel after either *trying to follow* the experimental instructions from Experiment 1, or *successfully following* the instructions. We predicted that participants in the solitude and control conditions would anticipate no difficulty enacting these instructions because they require no coordination with others. In contrast, we hypothesized commuters in the conversation condition would expect a worse experience when they imagined trying to have a conversation than when they imagined actually having a conversation. This result would suggest that concerns about starting a conversation may be a more significant barrier to engaging in conversation with a stranger than concerns about how pleasant or enjoyable the conversation will be.

Method

We preregistered our methods, predictions, and analysis plan for this experiment at <https://aspredicted.org/blind.php?x=ri2gx9>.

Participants. We collected surveys from the same four train stations used in Experiment 1. We targeted a total sample of 200 participants over the four days we were allowed to conduct

this experiment, but were unable to reach this goal. In total, 148 people completed the survey ($Mage = 38.11$ years, $SD = 11.67$; 56.76% male) in exchange for 5£.

Design. This experiment utilized a 2 (instructions: try or succeed) \times 3 (condition: conversation, solitude, or control) experimental design with repeated measures on the second factor.

Procedure. We recruited participants using the same method as Experiment 1, except that we told participants that the study only required completing one survey during their commute. We provided participants with the survey link, which they opened on a digital device with the experimenter present. Participants completed the consent form and the extraversion scale from Experiment 1 ($\alpha = .867$) on the train platform, and then signed a form promising to complete the rest of the survey during their commute in exchange for a 5£ gift card (which we sent to them after completing the survey).

Survey. Participants first indicated what they “normally do during [their] commute” by marking any of the following options that applied: talk to a stranger, talk to an acquaintance or friend, talk/socialize on a computer/phone, read, sleep, think (by yourself), work, or other (presented in a randomized order).⁸ Participants then reported their expectations about “what it would be like to talk to a fellow commuter” on 5 different items: 1) How interested would you be to talk to another fellow commuter? (1 = *not at all interested*, 7 = *very interested*), 2) How interested would another fellow commuter be to talk to you? (1 = *not at all interested*, 7 = *very interested*), 3) How difficult would it be to start the conversation? (1 = *not at all difficult*, 7 = *very difficult*), 4) How difficult would it be to end the conversation? (1 = *not at all difficult*, 7 =

⁸ If participants reported that they normally talk to a stranger or acquaintance/friend we asked them to “please estimate how often you do it” (free response). If participants checked “other”, we asked them to “please provide details about what you do.”

very difficult), and 5) What percentage of people riding the train do you think would be willing to talk to you? (enter percentage).

Participants then read a short description of the procedure used to recruit participants on the train platform in Experiment 1 to help them simulate the experience, and then read one randomly selected set of instructions from either the conversation, solitude, or control conditions from Experiment 1. Participants randomly assigned to the *succeed condition* imagined that they “successfully follow these instructions,” whereas participants in the *try condition* imagined that they “try to follow these instructions.” Participants then predicted how positive and productive their commute would be, and how much they would learn, using adapted items from Experiment 1: 1) How happy would you feel after your commute today, compared to normal, [after successfully following] / [if you tried to follow] these instructions? (-3 = *significantly less happy*, 3 = *significantly more happy*), 2) How sad would you feel after your commute today, compared to normal, [after successfully following] / [if you tried to follow] these instructions? (-3 = *significantly less sad*, 3 = *significantly more sad*), 3) How pleasant would your commute be today, compared to normal, [after successfully following] / [if you tried to follow] these instructions? (-3 = *significantly less pleasant*, 3 = *significantly more pleasant*), 4) How much would you learn on your commute today, compared to normal, [after successfully following] / [if you tried to follow] these instructions? (-3 = *learn significantly less*, 3 = *learn significantly more*), 5) How productive would you be (that is, how much would you accomplish) during your commute today, compared to normal, [after successfully following] / [if you tried to follow] these instructions? (-3 = *significantly less productive*, 3 = *significantly more productive*).

Participants then viewed each of the remaining two sets of instructions (from the conversation, solitude, or control conditions) and reported their expectations in each condition.

Finally, participants reported their demographic information and received the debriefing.

Results

Positivity. As in Experiment 1, we averaged predicted happiness, sadness (reverse-scored), and pleasantness to make an index of commute positivity ($\alpha = .80$). A 2 (instructions: try or succeed) \times 3 (condition: conversation, solitude, or control) mixed model ANOVA on predicted commute positivity yielded a significant main effect of condition, $F(2, 292) = 14.49, p < .001, \eta_p^2 = 0.09$, and a significant main effect of instructions, $F(1, 146) = 4.03, p = .047, \eta_p^2 = 0.03$, qualified by the predicted interaction, $F(2, 292) = 3.64, p = .027, \eta_p^2 = 0.02$ (see Figure 2). This interaction indicates that the experimental instructions only influenced evaluations in the conversation condition, such that participants expected a significantly more positive commute when imagining that they successfully followed the instructions ($M = 1.00, SD = 1.22$) than when they imagined trying to follow the instructions ($M = 0.48, SD = 1.24$), $t(146) = 2.58, p = .011, d = 0.43$. There was no effect of instructions in the solitude or control conditions, $t_s(146) = -.07$ and $.51$, respectively.

Additional analyses indicated that participants in the succeed condition expected a more positive experience in the conversation condition than in the solitude condition ($M = 0.21, SD = 0.85$), *paired* $t(71) = 4.42, p < .001, d = 0.75$, and in the control condition ($M = 0.28, SD = 0.60$), *paired* $t(71) = 4.53, p < .001, d = 0.75$, with a nonsignificant difference in expectations between the solitude and control conditions, *paired* $t(71) = -0.63$. In contrast, participants in try condition did not expect a more positive experience in the conversation condition than in the solitude condition ($M = 0.22, SD = 1.01$), *paired* $t(75) = 1.36, p = .179, d = 0.23$, or the control condition ($M = 0.24, SD = 0.50$), *paired* $t(75) = 1.63, p = .017, d = 0.25$, with a nonsignificant difference in expectations between the solitude and control conditions, *paired* $t(75) = -0.12$.

Productivity and learning. We conducted the same 2×3 ANOVA on expected learning and productivity (see Figure 2). For expected learning, we observed only a significant main effect of condition, $F(2, 292) = 72.74, p < .001, \eta_p^2 = 0.33$, such that participants expected to learn more in the conversation condition ($M = 1.20, SD = 1.21$) than in the solitude condition ($M = -0.09, SD = 1.17$) or control condition ($M = 0.27, SD = 0.72$). For expected productivity, we also observed a significant main effect of condition, $F(2, 292) = 7.04, p = .001, \eta_p^2 = 0.05$, such that participants expected their commute to be least productive in the conversation condition ($M = -0.13, SD = 1.47$) compared to the control condition ($M = 0.34, SD = 0.74$) and solitude condition ($M = 0.06, SD = 1.26$). We additionally observed a marginally significant interaction between condition and instructions on expected productivity, $F(2, 292) = 2.79, p = .063, \eta_p^2 = 0.02$, such that the effect of the instructions was somewhat larger in the conversation condition than in the solitude or conversation condition.

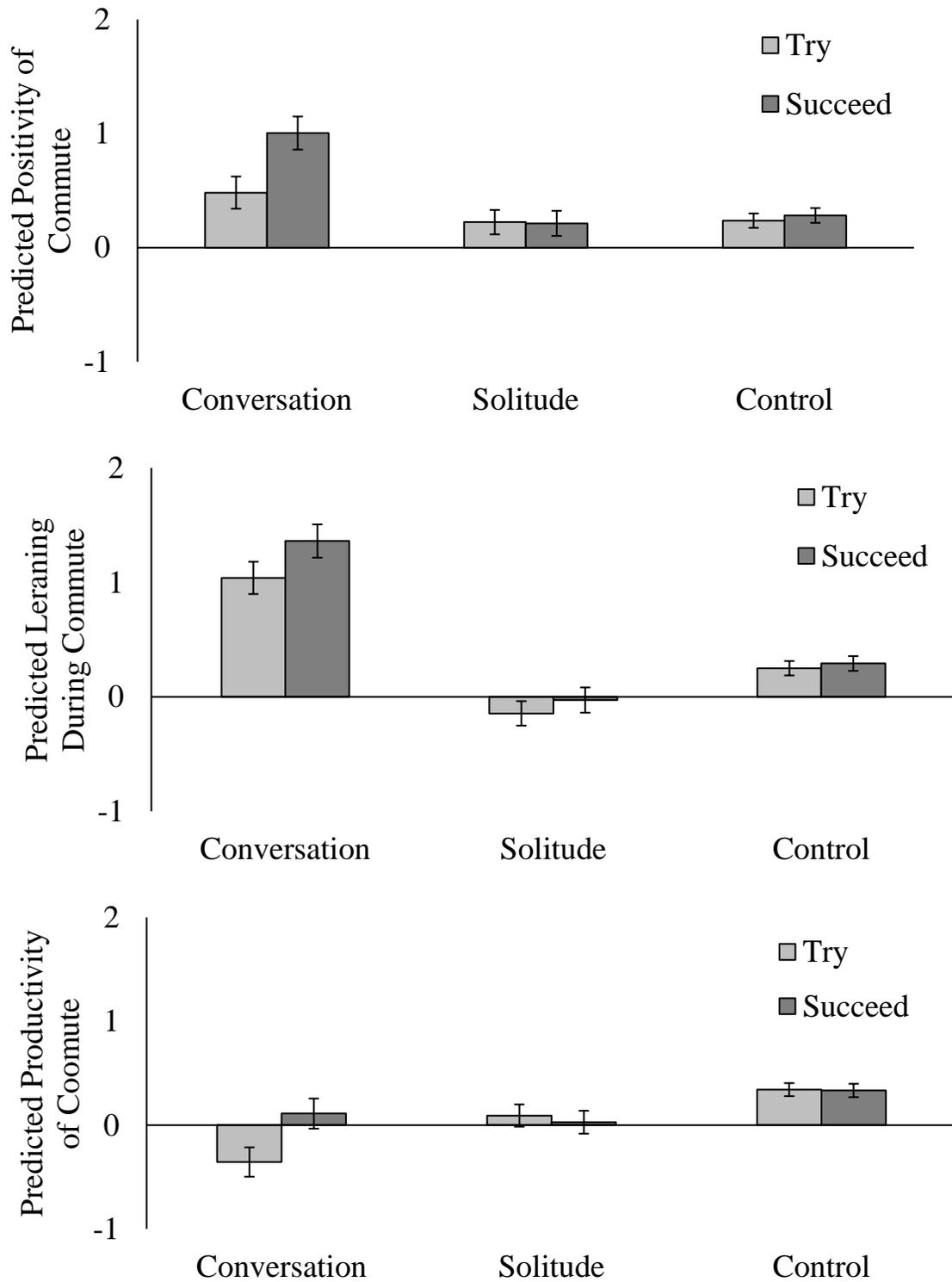


Figure 2. Predicted positivity of commute (top panel), learning on commute (middle panel), and productivity of commute (bottom panel) by experimental condition in Experiment 2. Error bars represent standard error around the mean.

Consistent with the results of Epley and Schroeder (2014) suggesting that people may be reluctant to talk with others because of concerns about starting a conversation rather than about the outcome of the conversation itself, we found that participants believed they were more interested in talking ($M = 2.57, SD = 1.92$) than others were ($M = 2.28, SD = 1.83$), *paired* $t(147) = 2.41, p = .017, d = 0.15$, that participants believed it would be more difficult to start a conversation ($M = 3.43, SD = 1.76$) than to end a conversation ($M = 2.53, SD = 1.89$), *paired* $t(147) = 5.15, p < .001, d = 0.49$, and that participants believed that relatively few of their fellow commuters ($M = 25.39\%, SD = 22.19\%$) would be willing to talk with them (significantly less than 50%, as we had hypothesized, *one-sample* $t(147) = -13.49, p < .001$).

Exploratory analyses. We conducted two additional analyses that we preregistered as exploratory.

Expectations about commute experiences and starting conversations. First, we examined associations between expectations about starting a conversation and the expected positivity, productivity, and learning on one's commute in the try and succeed conditions (see Table 2). Correlational analyses indicate that participants' own interest in talking and their perceptions of others' interest in talking are positively related to the expected positivity, amount of learning, and productivity of the commute ($r_s > .138$). Contrary to our predictions, we did not observe consistent relationships between the perceived difficulty of starting or ending a conversation, the expected percentage of others willing to talk, and expected experiences talking with strangers.

Table 2

Correlations Between Interest in Talking, Difficulty Starting and Ending the Conversation, and Expected Commute Experiences (Positivity, Learning, Productivity) in the Conversation

Condition When Participants Imagine Trying to vs. Succeeding in Talking (Experiment 2)

	Own Interest in Talking	Perceived Other's Interest in Talking	Expected Difficulty to Start Conversation	Expected Difficulty to End Conversation	Expected Percent Willing to Talk
Try Condition					
Positive Commute	.471**	.426**	-.020	.012	.021
Learning on Commute	.326**	.138	.093	.149	.002
Productive Commute	.274*	.164	.009	.118	.144
Succeed Condition					
Positive Commute	.583**	.505**	.027	-.155	.176
Learning on Commute	.243*	.304**	-.065	-.092	-.104
Productive Commute	.383**	.269*	-.052	-.252*	.046

Note. * $p < .05$, ** $p < .01$

Expectations about commute experiences and personal characteristics. Second, we examined associations between participant characteristics (age, gender, extraversion, and normal behavior on trains) and expected commute experiences in each experimental condition. As shown in Table 3, few significant correlations emerged with age and gender. Significant correlations, however, did emerge with people's past experiences talking with strangers and their natural inclination to be more extroverted. If people are overly reluctant to connect with strangers because they underestimate the extent to which others are interested in talking to them (Epley & Schroeder, 2014), then those who have more actual experience talking with strangers should also have more calibrated expectations, meaning that they should also expect more positive experiences when they imagine trying to connect with a stranger. Consistent with this possibility, the more people report normally talking to strangers, the more they also expected a positive experience when trying to implement the conversation instructions ($r = .248, p = .031$). However, people expected a more negative commute trying to implement the solitude instruction ($r = -.376, p = .001$).

Table 3

Correlations Between Participant Demographics, Trait Extraversion, Normal Talking Behavior, And Expected Commute Experiences (Positivity, Learning, Productivity) by Condition in Experiment 2

	Participant Gender	Participant Age	Extraversion	Normally Talk to Strangers
<u>Try Condition</u>				
<u>Conversation Condition</u>				
Positive Commute	.095	-.208 ⁺	.314**	.248*
Learning on Commute	.397**	-.169	.262*	.060
Productive Commute	-.003	-.187	-.190	-.005
<u>Solitude Condition</u>				
Positive Commute	.106	-.198 ⁺	-.197	-.376**
Learning on Commute	.111	-.190	-.135	-.176
Productive Commute	.030	-.045	-.059	.008
<u>Control Condition</u>				
Positive Commute	.096	-.041	.068	-.049
Learning on Commute	-.048	.054	-.016	.169
Productive Commute	-.095	.035	.149	.069
<u>Succeed Condition</u>				
<u>Conversation Condition</u>				
Positive Commute	.239*	-.152	.301*	.079
Learning on Commute	.155	-.014	.081	-.045
Productive Commute	.137	-.016	.030	.027
<u>Solitude Condition</u>				
Positive Commute	.066	-.064	.057	-.112
Learning on Commute	.027	-.179	-.005	-.322**
Productive Commute	.034	-.130	.021	-.313**
<u>Control Condition</u>				
Positive Commute	.047	-.275*	.025	-.132
Learning on Commute	.072	-.229	.090	-.168
Productive Commute	.109	-.329**	.073	-.122

Note. ⁺ $p < .10$, * $p < .05$, ** $p < .01$. Gender is coded 1 = male, 2 = female.

Discussion

People imagined that *trying* to talk with a stranger to be a less positive experience than imagining *actually* talking with a stranger, suggesting that a barrier to social engagement may come not from expecting a poor interaction with others but rather from anticipating that others are relatively disinterested in engaging in conversation. This seems to occur, at least in part, because people expect that strangers are relatively disinterested in talking with them. Consistent with this possibility, people who were more experienced with starting conversations (e.g., extraverts, people who normally talk with strangers) did not anticipate as big a difference in outcomes when trying versus successfully having a conversation. Experiment 2 further revealed some reasons why people may expect starting conversation to be unpleasant: people thought they would be more interested in talking than others would be, expected that starting conversations would be more difficult than ending conversations, and expected that only a minority (about 25%) would be willing to talk with them.

General Discussion

Human beings are deeply social and yet at times can appear deeply unsocial, avoiding connecting with strangers even when it would be relatively easy to do so. Our findings suggest that social disconnection in these settings does not stem from people maximizing their own wellbeing by keeping to themselves. On trains going in and out of London, commuters randomly asked to have a conversation with a stranger had a more positive experience, and reported being more likely to talk to a stranger again in the future, than those randomly assigned to sit in solitude or do whatever they normally do on their commute. Instead, our research suggests that people may avoid pleasant conversations with others in situations when they perceive that others do not want to connect with them. In Experiment 2, commuters expected that *trying* to have a

conversation with another person would be less pleasant than *actually* having a conversation with another person. This result appears to stem from concerns about starting conversations in this context. Participants believed that they would personally be more interested in talking than other commuters were, consistent with a form of pluralistic ignorance (Epley & Schroeder, 2014; Prentice & Miller, 1996), and estimated that only a small minority (25%) of fellow commuters would be willing to talk.

We believe these fears likely reflect a tendency to significantly underestimate others' sociality, creating a misplaced barrier to engaging others in conversation. Although we do not know the exact percentage of riders on our participants' trains would be willing to have a conversation, 78% of participants in the conversation condition of Experiment 1 reported having a conversation of some kind that ranged from 1-60 minutes long. Based on their written comments, those who reported not having a conversation were not rejected by others but instead seemed more likely to infer that others did not want to talk hence did not try (see Appendix A). Notice these perceptions that lead to social avoidance are likely to be self-fulfilling: believing that others are unwilling to connect could keep people from trying and thereby learning that their concerns about talking with strangers could be miscalibrated. Indeed, the more people reported talking to strangers in daily life in Experiment 2, the less we observed a difference in expectations about trying versus actually having a conversation, presumably because those who frequently try to talk with others know that trying to talk is likely to result in actually having a conversation (see also Sandstrom & Boothby, 2020). This result is consistent with a previous finding (Epley & Schroeder, 2014; Experiment 4) that travelers riding in cabs who report normally talking to their cab drivers also expect that doing so will be pleasant, consistent with

these riders' actual experiences, while those who report rarely talking to their cab drivers mistakenly expect that talking will be less pleasant than keeping to themselves.

These experiments add to the growing literature identifying increased wellbeing from expanding one's social circle to connect with others even in relatively fleeting exchanges (e.g., Gunaydin et al., 2020; Sandstrom & Dunn, 2014). Perhaps more important, they document a robust positive effect of connecting with strangers even in a culture well-known for being reserved, in experiments that manipulate whether people are actually interacting with another person in conversation or not. These experiments provide clear causal evidence that talking with strangers in conversation is relatively pleasant (cf., Quoidbach et al., 2019). These experiments also provide additional evidence about the precise barriers that might keep people from connecting with strangers more often in daily life. London train riders did not seem to think that talking with others would be systematically unpleasant as long as they could have a conversation. Instead, they seemed to fear that others would be unwilling to talk in the first place.

This mechanism predicts that people's expectations of their enjoyment of a conversation will be more calibrated when they are aware that another person with whom they would like to talk is also interested in talking with them, compared to cases when there is more uncertainty about another person's interest in talking. Consistent with this possibility, people's expectations about their experience in conversations with friends (whose interest in talking can be presumed) tend to be more calibrated than their expectations in conversations with strangers (Dunn et al., 2008; Kardas, Kumar, & Epley, 2021). In another experiment, students in a dining hall were more likely to talk with a stranger when they were able to wear wristbands indicating whether or not they were interested in having a conversation, thereby signaling their interest clearly and

enabling people to talk with others they knew were also interested in talking with them (see Lok & Dunn, 2021). People should also be better calibrated predicting their experiences when they know they are going to have a conversation with someone else, and hence are unlikely to be rejected, compared to when there is more uncertainty about whether one's attempt to start a conversation will be successful. More direct tests of this hypothesis are needed, but one series of experiment found that people about to have a conversation with a stranger in the lab did not underestimate how much they would enjoy the opening moments of the conversation (but did underestimate how much they would continue to enjoy repeated periods of conversation with the same person; Kardas, Schroeder, & O'Brien, 2021).

Given these results, we predict the psychological barriers to engaging in conversations with strangers are likely to vary across contexts based on the perceived risks of social interaction. When another's interest in connecting is uncertain, the perceived risks of trying to engage another person are likely to dominate decision making (Murray, Holmes, & Collins, 2006). In much of modern life, one cannot escape the constant presence of smartphones when out in public or when traveling. Existing research has documented how smartphones may impose social costs by distracting attention while in conversation, or by serving as a substitute for social interaction altogether (Kushlev, Dwyer, & Dunn, 2019). We believe our research suggests another potential social cost of smartphone technology: providing an imperfect signal that one is uninterested in talking to others. Although donning headphones or staring into a phone could be used deliberately to avoid conversations, it is also a mindless activity that might at other times lead people to underestimate others' interest in talking. As one commuter from Experiment 1 wrote, "I looked at everyone on their phones with their earplugs in and felt awkward thinking about striking up a conversation. So I chickened out. [N]ow I feel frustrated and sad" (See Appendix A

for full quote). Understanding how these cues could be guiding, or systematically misguiding, social behavior is an important topic for future research.

Once a person knows they are going to connect with another person in a given situation, additional perceived risks may guide social decision making. Here, too, emerging research suggests that people may underestimate the positive impact of reaching out and connecting with others by underestimating how competently they will be able to carry on conversation with a stranger (Sandstrom & Boothby, 2020), how interested others will be in discussing deep and meaningful content (Kardas, Kumar, & Epley, 2021), how much others will like them after the conversation (Boothby, Cooney, & Clark, 2018), how much they will learn (Atir, Wald, & Epley, 2021), or how positively others will feel (Kumar & Epley, 2018; Boothby & Bohns, 2020; Zhao & Epley, 2021). As with many decisions under uncertainty, potential risks are easy to overestimate, potentially creating barriers in this case to connecting with others more often in daily life.

Finally, it is possible that either the perceived or actual consequences of social interactions could vary across cultures, helping to explain differences in social norms across cultures. Based on our own data, train riders in Chicago and London rarely talk to strangers, but you might be hard pressed to avoid talking with a stranger in other parts of the world. Variance in the observed sociality of people around the world could stem either from differences in the actual experience of connecting with others, or from differences in people's beliefs or expectations about the consequences of connecting with others. The data we report here suggests cultural differences in observed behavior may be more likely to stem from differences in people's expectations about the outcomes of conversations, which could then drive behavior and create strong social norms. Underestimating how interested others are in having a conversation

could make people reluctant to try to start one, thereby keeping people from obtaining the very experience in their daily life that would serve to create more calibrated expectations. In one experiment with cab riders in Chicago (Epley & Schroeder, 2014, Experiment 4), those who reported routinely having conversations with their drivers expected that having a conversation would be more pleasant than those who report rarely talking with their driver, even though both groups of cab riders had a more pleasant commute when they talked to their driver than when they did not. The newsworthy resistance some Londoners showed to the possibility of talking more on their commuter trains stands in stark contrast to the actual experience of the Londoners in our experiments who were significantly happier when encouraged to talk with another person, and who then expressed more interest in talking with another person on a future trip. It is possible that those living in more reserved cultures would enjoy talking with strangers every bit as much as those living in more sociable cultures, but simply have fewer social interactions from which they could learn just how much they would enjoy those conversations.

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Supplemental Materials

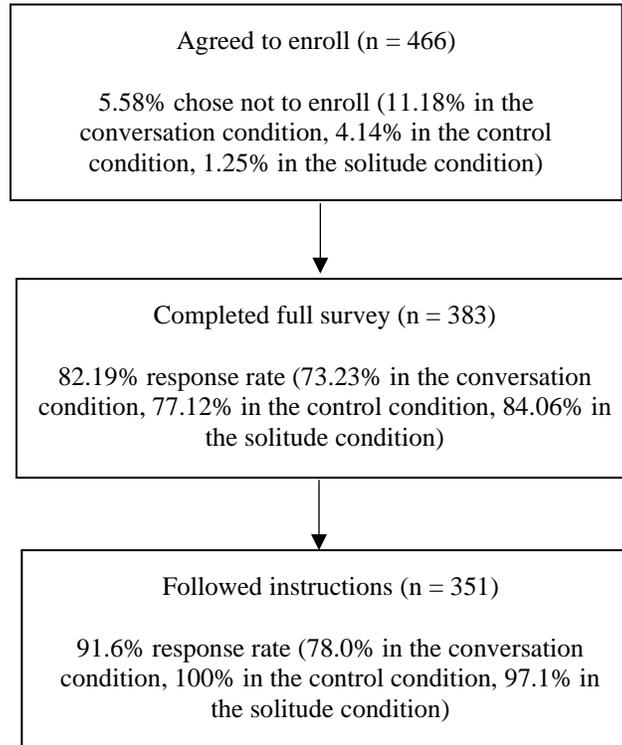
Experiment 1: Inside a Typical London Commuter Train



Experiment 1: Recruitment Poster



Experiment 1: Enrollment in Experiment



Experiment 1: Participant Characteristics

Supplemental Table S1

Sample Characteristics in Experiment 1

	All conditions (n = 383)	Conversation Condition (n = 127)	Control Condition (n = 118)	Solitude Condition (n = 137)
Normal Commuting Behaviors				
Talk to someone	14.4%	22.0%	6.8%	13.8%
Talk or socialize on computer or phone	34.7%	40.2%	32.2%	31.9%
Read	59.3%	58.3%	66.1%	54.3%
Sleep	26.9%	25.2%	30.5%	25.4%
Think	42.0%	39.4%	38.1%	47.8%
Work	36.8%	40.9%	37.3%	32.6%
Other	15.7%	11.0%	18.6%	17.4%
Today's Commuting Behaviors				
Talk to someone	28.7%	78.0%	5.9%	2.9%
Talk or socialize on computer or phone	26.6%	36.2%	30.5%	14.5%
Read	35.8%	29.9%	42.4%	35.5%
Sleep	12.5%	6.3%	16.1%	15.2%
Think	36.8%	27.6%	28.0%	52.9%
Work	15.7%	15.0%	19.5%	13.0%
Other	17.2%	12.6%	23.7%	15.9%
Extraversion	2.52 (0.83)	2.54 (0.88)	2.51 (0.78)	2.50 (0.84)
Commute duration	59.99 min (33.67)	56.40 min (29.43)	64.33 min (34.63)	59.64 min (36.25)
Did someone sit next to you during your commute today?	70.0% yes	78.0% yes	66.9% yes	65.2% yes
Person with whom you spoke/Person sitting closest to you				
Person's Age - Older than you	44.6%	49.6%	45.8%	39.1%
Person's Age - Younger than you	26.4%	22.0%	22.9%	33.3%
Person's Age - Same as you	21.4%	23.6%	22.0%	18.8%

Person's Age – Not sure	7.6%	4.7%	9.3%	8.7%
Person's Gender – Female	43.6%	52.0%	39.0%	39.9%
Person's Gender – Male	53.3%	48.0%	57.6%	54.3%
Person's Gender - Not sure	3.1%	0%	3.4%	5.8%
Person's Race - Same race	71.3%	79.5%	72.0%	63.0%
Person's Race - Different race	17.5%	14.2%	16.9%	21.0%
Person's Race - Not sure	11.2%	6.3%	11.0%	15.9%

Conversation characteristics (only among those who talked)

Duration of conversation	10.28 min (10.88)
Interestingness of conversation (1 = <i>not at all</i> , 4 = <i>very</i>)	2.06 (1.33)
Impression of conversation-partner (-3 = <i>very negative</i> , 3 = <i>very positive</i>)	1.33 (1.16)

Note. Standard deviations are reported in parentheses where appropriate. All measurements were taken after random assignment to experimental condition, meaning that participants' responses could have been influenced by their condition assignment. The normal commuting behaviors and extraversion levels were reported in the pre-survey (prior to commute); all other variables were reported in the post-survey (after commute). Ratings by experimental condition significantly varied on the following measures: normal talking behavior, $\chi^2(2, 383) = 12.08, p = .002$; all of the day's reported commute behaviors except for reading and working; the gender of the person by whom the participant sat or with whom the participant talked, $\chi^2(4, 383) = 14.57, p = .006$; and the race of the person by whom the participant sat or with whom the participant talked, $\chi^2(4, 383) = 10.03, p = .040$.

Experiment 1: Instruction Cards

Conversation Condition

On your commute this morning, **please try to strike up a conversation** with a fellow commuter. You can talk to anyone you want about anything you wish. For example, you might start by asking someone where they live and how long they have lived there, what they do for a living, or what they think about a particular news story. You can then give background about yourself, where you live, what you do for a living, or what you think about a particular news story. Try in whatever time you have to get to know this person a little bit, and let them get to know you a little. You can talk to this person for as long or as little as you would like, although it would be best if you could continue the conversation for as long as the conversation naturally allows. You should try to use your commute this morning to **have a conversation**.

Survey: Here is the survey link: tinyurl.com/londontransportstudy.

Immediately after your commute ends, please go back to the survey (which should already be open on your phone). There will be about 15 more short questions to answer, which should take no longer than 5 minutes to complete.

Once you complete your survey, you will receive a code to add £5 more to your Starbucks gift card!

Thank you for participating!

Solitude Condition

On your commute this morning, **please do not engage anyone in conversation**. Instead, take this time to sit alone with your thoughts. You can think about whatever you have going on in the day, or just let your mind wander. You should try to use your commute this morning to have some time alone.

Survey: Here is the survey link: tinyurl.com/londontransportstudy.

Immediately after your commute ends, please go back to the survey (which should already be open on your phone). There will be about 15 more short questions to answer, which should take no longer than 5 minutes to complete.

Once you complete your survey, you will receive a code to add £5 more to your Starbucks gift card!

Thank you for participating!

Control Condition

On your commute this morning, **please do whatever you would normally do**. You may choose to talk, write, read, work, sit quietly, sleep or any other activity you typically do. You should try to use your commute this morning to do what you would normally do.

Survey: Here is the survey link: tinyurl.com/londontransportstudy.

Immediately after your commute ends, please go back to the survey (which should already be open on your phone). There will be about 15 more short questions to answer, which should take no longer than 5 minutes to complete.

Once you complete your survey, you will receive a code to add £5 more to your Starbucks gift card!

Thank you for participating!

Experiment 1: Debriefing Statement

Thank you so much for taking part in the study earlier today.

The purpose of the study was to understand how different types of activities—specifically, socializing compared to sitting in solitude—influence people’s well-being and happiness, and people’s expectations about how these activities will influence their well-being.

We conducted a research study testing this question in 2014 using commuters in the Chicago (USA) area. The study was published here: [paper link]. To read a few media articles describing the study, you can see [link] or [link]. Overall, there were two key results from this paper. First, commuters believed that conversing with a fellow commuter during their commute would be a significantly more negative experience (e.g., less pleasant, provoking less happiness) than sitting in solitude during the commute. Second, commuters’ beliefs were mistaken because talking to a fellow commuter actually created a better experience (more pleasant, more happiness) than sitting in solitude during the commute.

We have now partnered with the BBC World Service Group to conduct another test of this finding in the UK. In today’s study, you were assigned to be in one of three experimental conditions: talking to a fellow commuter, sitting in solitude, or doing what you would normally do. We expect that being in the study today may have changed your commuting experience. We will analyze your survey responses (in aggregate) in order to test our research question.

If you have further questions about today’s study, please contact [information].

Experiment 1: Additional Analyses

Supplemental Table S2

Predicted and Actual Positivity, Amount of Learning, and Productivity During Train Commutes in the Conversation, Solitude, and Control Conditions in Experiment 1 (Intent to Treat; $n = 382$)

	Positivity		Learning		Productivity	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<u>Pre-Commute</u>						
Conversation	0.73	0.90	0.88	0.86	0.26	1.17
Solitude	0.40	0.79	0.24	0.86	0.23	1.07
Control	0.19	0.71	0.36	0.89	0.30	1.00
<u>Post-Commute</u>						
Conversation	0.89	0.98	0.83	0.93	0.26	1.10
Solitude	0.35	0.97	0.12	1.03	0.03	1.12
Control	0.41	0.91	0.31	1.02	0.25	1.22

Supplemental Table S3

Predicted and Actual Positivity, Amount of Learning, and Productivity During Train Commutes in the Conversation, Solitude, and Control Conditions in Experiment 1 (Treated; $n = 350$)

	Positivity		Learning		Productivity	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<u>Pre-Commute</u>						
Conversation	0.80	0.94	0.96	0.88	0.22	1.23
Solitude	0.40	0.80	0.22	0.86	0.22	1.08
Control	0.19	0.71	0.36	0.89	0.30	1.00
<u>Post-Commute</u>						
Conversation	1.04	1.01	0.96	0.97	0.23	1.17
Solitude	0.33	0.98	0.10	1.04	0.00	1.12
Control	0.40	0.91	0.31	1.02	0.25	1.22

To examine our primary hypothesis only among the treated participants (those who reported following our instructions), we conducted a 2 (survey timing: pre-commute vs. post-commute) \times 3 (condition: conversation, solitude, or control) mixed model ANOVA on positivity. There was a significant main effects of survey timing, $F(1, 347) = 7.05, p = .008, \eta_p^2 = 0.02$, and condition, $F(2, 347) = 20.53, p < .001, \eta_p^2 = 0.11$, qualified by the predicted interaction, $F(2, 347) = 4.27, p = .015, \eta_p^2 = 0.02$ (Table S3). Consistent with our hypotheses, participants' actual experiences varied by experimental condition, $F(2, 347) = 17.36, p < .001, \eta_p^2 = 0.09$: participants reported having a significantly more positive commute in the conversation condition than in either the solitude condition, $t(231) = 5.22, p < .001$, or the control condition, $t(215) = 4.72, p < .001$. The difference between the solitude and control conditions was nonsignificant, $t(250) = -0.59$. Inconsistent with our hypotheses, participants also expected the same overall pattern of results across conditions before their commute, $F(2, 347) = 14.90, p < .001, \eta_p^2 = 0.08$, expecting to have a more positive commute in the conversation condition than in the solitude condition, $t(231) = 3.42, p < .001$, or the control condition, $t(215) = 5.29, p < .001$. They also expected to have a more positive commute in the solitude than control condition, $t(250) = 2.12, p = .019$.

Unsurprisingly, this “treated” analysis, which examines only those who followed our experimental instructions and hence experienced the intended manipulation, are stronger than the “intent-to-treat” analysis including all participants reported in the main text.

Appendix A

Reasons Participants Provided For Not Talking in The Conversation Condition in Experiment 1.

- “He was wearing headphones.”
- “Everyone around me had headphones or working on their laptops.”
- “The train is a quiet place in the morning. There is an unwritten rule that you don't communicate with others. Everyone around me had head phones on.”
- “The other commuters were reading and didn't want to disturb them.”
- “Anxiety and lack of opportunity. The latter because no one sat next to me, and the people nearest me (across the aisle) were reading, on the phone, or had earphones in. The former because I was about 20 years younger than everyone in my carriage and 1 of the only women. I felt uncomfortable striking up a conversation out of the blue.”
- “Too early in the morning.”
- “I needed to work.”
- “See: ‘how it made me feel’” [Note: in that section, the participant wrote: “I looked at everyone on their phones with their earplugs in and felt awkward thinking about striking up a conversation. So I chickened out. So now I feel frustrated and bit sad as I see myself as a fairly gregarious person. Even though the train was delayed I couldn't think of a day to break the ice with anyone. I used to joke when I was backpacking about striking up a conversation with random backpackers on a train, how I'd never do it at home. Now I haven't, again.”]
- “Too short a commute and too many folk engaged on devices and listening to music.”
- “No one sat close to me.”