



Cognitive Science 48 (2024) e13372

© 2024 The Authors. *Cognitive Science* published by Wiley Periodicals LLC on behalf of Cognitive Science Society (CSS).

ISSN: 1551-6709 online

DOI: 10.1111/cogs.13372

Does Lexical Coordination Affect Epistemic and Practical Trust? The Role of Conceptual Pacts

Mélinda Pozzi, Adrian Bangerter, Diana Mazzarella

Cognitive Science Center, University of Neuchâtel

Received 20 October 2021; received in revised form 17 October 2023; accepted 19 October 2023

Abstract

The present study investigated whether humans are more likely to trust people who are coordinated with them. We examined a well-known type of linguistic coordination, lexical entrainment, typically involving the elaboration of “conceptual pacts,” or partner-specific agreements on how to conceptualize objects. In two experiments, we manipulated lexical entrainment in a referential communication task and measured the effect of this manipulation on epistemic and practical trust. Our results showed that participants were more likely to trust a coordinated partner than an uncoordinated one, but only when the latter broke previously established conceptual pacts.

Keywords: Lexical entrainment; Commitment; Joint action; Linguistic conventions; Referential communication task

1. Introduction

Much research in philosophy and psychology has explored the nature of trust, its foundations, and its role in human interactions. Philosophers like Hawley (2014, 2019) have suggested that to trust someone is to believe that one has a commitment, and to rely upon them to fulfill it. For instance, one can trust speakers to say the truth, and be more likely to accept the information they provide (epistemic trust). Or, one can trust agents to perform certain

Correspondence should be sent to Mélinda Pozzi and Diana Mazzarella, Cognitive Science Center, University of Neuchâtel, Pierre-à-Mazel 7, Neuchâtel CH-2000, Switzerland. E-mail: pozzimelinda@gmail.com and diana.mazzarella@unine.ch

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

actions, and be more likely to interact or cooperate with them (practical trust). In both cases, commitment is crucial: epistemic trust involves relying on one's interlocutor to act upon their commitment to say the truth; practical trust involves relying on one's partner to fulfill their commitment to act as expected. Experimental research in psychology has confirmed the role of commitment in modulating trust by showing that individuals who violate a commitment are perceived as less trustworthy, and their word is less likely to be trusted at face value (Mazzarella, Reinecke, Noveck, & Mercier, 2018; Pozzi & Mazzarella, 2023; Tenney, Meikle, Hunsaker, Moore, & Anderson, 2019; Vulliamy, Clément, Scott-Phillips, & Mercier, 2017).

Which information do humans rely on to grant trust? Trust judgments, be they about epistemic or practical trust, are based on a variety of cues that provide evidence for the agent's ability or willingness to fulfill their commitments. These include access to information (Einav & Robinson, 2011; Pillow, 1989), past accuracy (Elashi & Mills, 2014; Koenig, Clément, & Harris, 2004; Ronfard & Lane, 2019; Tenney, MacCoun, Spellman, & Hastie, 2007, 2008), expertise (Koenig & Jaswal, 2011), perceived benevolence (Mascaro & Sperber, 2009), group membership (Elashi & Mills, 2014), and emotional expressions (Clément, Bernard, Grandjean, & Sander, 2013), to mention just a few. Crucially, these studies show that both epistemic and practical trust can be fostered by a single cue (but see Pesch & Koenig, 2018). For instance, in-group members are expected to act in a certain way—typically beneficial to other in-group members—which encourages people to share resources and interact with them (practical trust): adults are more likely to commute to and work with in-group rather than out-group members, and share money or an office with them (Ben-Ner, McCall, Stéphane, & Wang, 2009). But in-group members are also expected to speak the truth, which incites people to believe them (epistemic trust): even children are more likely to accept the testimony of an in-group informant than an out-group informant (Elashi & Mills, 2014). This may be due to the fact that trustworthiness, both in its epistemic and practical facets, is ultimately linked to the fulfillment of one's commitments.

While most of the cues investigated in the psychological literature concern the attribution of mental states or personal traits, less attention has been devoted to analyzing how linguistic behavior can foster epistemic and practical trust. To fill this gap, the present study focuses on lexical entrainment, a specific type of linguistic behavior involving lexical coordination, through which interlocutors converge on the use of the same lexical expressions to refer to the same objects. This phenomenon results from an interactive grounding process in which interlocutors (implicitly) agree on how to conceptualize a particular referent, that is, they establish conceptual pacts (Brennan & Clark, 1996; Metzing & Brennan, 2003). We expect lexical entrainment to be particularly relevant to the study of trust as, like other kinds of coordination, it may elicit a sense of commitment (Michael, 2022). As discussed by Michael, Sebanz, and Knoblich (2016), coordination between agents creates expectations (of what their partner will do next) on which the agents rely, giving rise to a sense of commitment. When establishing a conceptual pact, speakers would be expected to reuse the same referential expressions they have agreed on, and addressees would rely on this expectation to recognize their intended meaning, thus committing to communicatively act in a certain way. Indeed, establishing and maintaining conceptual pacts fosters efficient communication by facilitating reference assignment (Clark & Bangerter, 2004), while breaking conceptual pacts impedes or slows down

understanding (Barr & Keysar, 2002; Brennan & Clark, 1996; Brown-Schmidt, 2009; Kronmüller & Barr, 2007; Metzing & Brennan, 2003).

In light of this, the present study aims at investigating whether establishing, maintaining, and breaking conceptual pacts affects the perceived (epistemic and practical) trustworthiness of one's interlocutor. Promising evidence comes from research demonstrating that lexical coordination is correlated with practical trust measured in economic games (Scissors, Gill, & Gergle, 2008, 2009), and with better negotiation outcomes (Taylor & Thomas, 2008). When experimentally manipulated, lexical coordination positively affected practical trust and negotiation outcomes (Swaab, Maddux, & Sinaceur, 2011), as well as the perceived integrity of a spoken language system answering questions asked by human users (Linnemann & Jucks, 2018). Advancing this line of research, we tested the effect of conceptual pacts on participants' trust judgments in two computer-mediated experiments in which we manipulated the establishment (Experiment 1), and maintaining versus breaking (Experiment 2) of conceptual pacts. Since trust, in both its epistemic and practical facets, is related to the fulfillment of one's commitments, we expected our manipulations to affect both epistemic and practical trust.

2. Experiment 1

Experiment 1 tested the hypothesis that establishing conceptual pacts has a positive effect on epistemic and practical trust. In the first phase, lexical coordination was manipulated in a referential communication task. In the second phase, epistemic and practical trust judgments for coordinated and uncoordinated partners were collected.

2.1. Method

The study was approved by the Ethics Committee of the University of Neuchâtel and pre-registered on OSF (osf.io/46sh2). Participants gave their informed consent before taking part in the study.

2.1.1. Participants

A power analysis for a two-tailed binomial test based on having 80% power to detect an effect size $g = .2$ with an α -level of 5% in each group indicated a minimum of 98 participants: 49 participants for the Epistemic Trust group, and 49 participants for the Practical Trust group.

We recruited 188 participants through Prolific, all adult native English speakers. They were paid 1.67£ for a 20-min experiment. Due to the preregistered exclusion criteria (detailed in the "Results" section), the final sample size comprised 51 participants (24 men, 27 women, $M_{age} = 31.53$, $SD = 10.21$) in the Epistemic Trust group, and 51 participants (21 men, 30 women, $M_{age} = 33.16$, $SD = 10.94$) in the Practical Trust group.

2.1.2. Materials

Two different sets of 12 black and white images (Fig. 1) were used and randomized between the two rounds of the referential communication task (one different set for each partner). Half of the images represented unfamiliar objects that were difficult to name, and participants

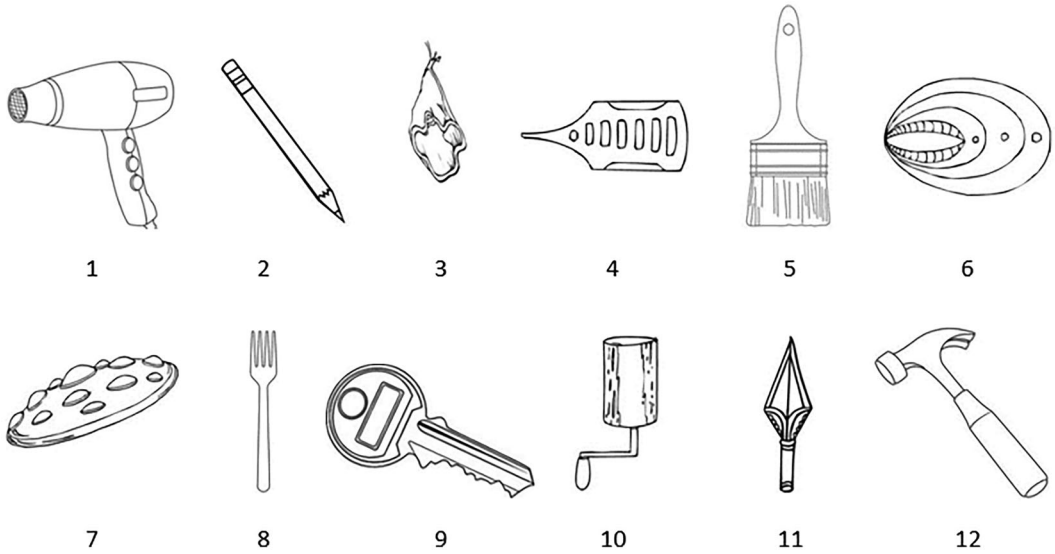


Fig. 1. Example of a set of images used in the referential communication task (Experiment 1).

needed to come up with novel expressions to refer to them. This ensured that the use of shared referential expressions was due to the establishment of conceptual pacts, and not to pre-existing language conventions. The other half of the images represented familiar objects (i.e., easily named with conventional expressions) and served as fillers.

To create our sets of objects, 26 native English speakers were recruited via Prolific to perform a norming pretest in which they named or briefly described 48 more or less familiar objects presented on the screen. The unfamiliar objects were used in previous experiments by Brown-Schmidt (2009) and Arnold, Kam, and Tanenhaus (2007). For our main study, we selected the 12 objects with the lowest variability among participants' expressions as familiar objects ($M_{\text{different expressions}} = 1.42$), and the 12 objects with the highest variability as unfamiliar objects ($M_{\text{different expressions}} = 17.75$). Examples of expressions used by participants for the unfamiliar object 4 in Fig. 1 were "the grater," "the thermometer," or "the pen nib."

The epistemic trust decision involved choosing between two texts (attributed to the coordinated and the uncoordinated partners) adapted from the material of Vullioud et al. (2017). The practical trust decision involved choosing the partner with whom participants played a second referential communication task, involving Tangram figures adapted from Clark and Wilkes-Gibbs (1986).

2.1.3. Design and procedure

The experiment was run online (LIONESS Lab platform, Giamattei, Yahosseini, Gächter, & Molleman, 2020) with virtual partners to control for other factors that may affect trust (e.g., gender, accent, facial expressions, as well as coordination cues other than lexical entrainment that would not be manipulated). Participants were led to believe that they were interacting with real partners, but they actually received scripted answers. Partners and participants were assigned a cartoon avatar (Bugs Bunny or Daffy Duck for the partners, Mickey Mouse for

the participants) to make their identification easier. All participants performed a referential communication task (called “naming game” for the participants) with a coordinated partner (i.e., with complete lexical entrainment) and an uncoordinated partner (i.e., with partial lexical entrainment). Then, half of the participants made an epistemic trust decision (an advisor choice, i.e., following the advice of one of their partners), while the other half made a practical trust decision (a partner choice, i.e., selecting one of their partners for playing another “naming game”). Participants were randomly assigned to one of the two groups when starting the experiment.

In Phase 1, we manipulated coordination with a referential communication task. Participants were told that they and their partners would each see a display of the same familiar and unfamiliar objects but in a different order. They were instructed that the aim of the game was for the Matcher to select the object described by the Director. Participants always started as Directors (they named or described the objects for the partner) so that they would be the ones introducing the referential expressions (Fig. S1). They were asked to come up with expressions starting with “The” and not exceeding four words after “The” (to make it more plausible for the partner to reuse the same references). They then played again as Matchers (they selected the images described by the partner) with the same set of reshuffled images (Fig. S2). One round of the game thus consisted of two trials (one trial as Director and one trial as Matcher).

Participants played one round of this referential communication task with each partner one after the other. The coordinated partner reused all the participant’s referential expressions (establishing conceptual pacts for all the objects), while the uncoordinated partner used new referential expressions for half of the unfamiliar objects (not establishing conceptual pacts for 3/6 objects). We counterbalanced the order of partners, which partner was coordinated, and which partner had which set of objects. The order of objects within a set was different and predefined for each trial, so that familiar and unfamiliar objects were positioned in the same way between the two partners. Further, the position of the unfamiliar objects for which the conceptual pacts were broken as well as the timing when they were broken was the same for all participants.

In Phase 2, we measured trust. Participants in the Epistemic Trust group (advisor choice, Fig. S3) were told that they had to type a text on the computer and that they would be allowed to proceed only if they typed it correctly. They chose which text to type (among two texts that they could not see in advance) based on the conflicting advice of their two previous partners: one partner stated that Text 1 was easier, while the other stated that Text 2 was easier (the advice was counterbalanced between the two partners). Participants were, therefore, better off selecting the “right advisor.” After making their epistemic trust choice (binary measure), participants typed the text on the computer. Before their epistemic choice, participants were exposed for 5 s to two additional texts and gave their advice for their partners.

Participants in the Practical Trust group (partner choice, Fig. S4) selected one of their previous partners for playing another referential communication task (binary measure). The task was said to be more difficult than the previous one, and participants were, therefore, better off selecting the “right partner.” Participants then played another referential communication task with the selected partner. Fig. 2 summarizes the procedure.

Phase 1: Coordination manipulation	REFERENTIAL COMMUNICATION TASK	
	Round 1: Trial 1: Director role Trial 2: Matcher role } Partner 1 Round 2: Trial 1: Director role Trial 2: Matcher role } Partner 2	
Phase 2: Trust test	EPISTEMIC TRUST GROUP	PRACTICAL TRUST GROUP
	Advisor choice “Here is the advice given by your two previous partners: [x] picked as the easier text: Text 1 [y] picked as the easier text: Text 2 Which text do you want to type?”	Partner choice “It is a naming game similar to the previous ones, but the objects are more challenging to name. You will play this game with only one of your previous partners. Please choose one partner”

Fig. 2. Procedure of Experiment 1.

In the Epistemic Trust group, we predicted that participants would be more likely to choose the advice of the coordinated partner over the one of the uncoordinated one because they would perceive the former as more committed to saying the truth. Similarly, in the Practical Trust group, we predicted participants to be more likely to choose to play with the coordinated partner than with the uncoordinated one because they would perceive the former as more committed to acting in an expected way.

2.2. Results

We excluded 86 participants based on at least one of the following three preregistered exclusion criteria¹: (1) provided an inappropriate name for at least one familiar object; (2) provided a nonword for at least one object (e.g., spelling mistakes, to avoid the partner to repeat them); and (3) provided at least one of the three new referential expressions that we programmed the uncoordinated partner to use (meaning that the partner would repeat the participant’s expression and would not be uncoordinated). Data are available on OSF (osf.io/z6n3v/).

A two-tailed binomial test showed no effect of coordination, neither on epistemic (51% coordinated partner chosen, 26/51, binomial $p = 1.00$, Cohen’s $g = .01$) nor on practical (53% coordinated partner chosen, 27/51, binomial $p = .78$, Cohen’s $g = .03$) trust.

In light of this nonsignificant result, we ran a post hoc manipulation check to assess whether our coordination manipulation was salient enough to affect some other variable known to be robustly affected by lexical entrainment. Thirty-four English native speakers recruited via Prolific (18 men, 16 women, $M_{age} = 33.68$, $SD = 13.39$) played the referential communication

task with two partners (as in Experiment 1) but, after each game, they rated how cooperative their partner was on a 5-point Likert scale from 1 “not at all cooperative” to 5 “extremely cooperative.” A Wilcoxon signed-rank test showed that the coordinated partner ($M = 4.88$, $M_d = 5$, $SD = 0.41$) was indeed rated as significantly more cooperative than the uncoordinated one ($M = 4.53$, $M_d = 5$, $SD = 0.75$, $Z = 61$, $p = .009$, $r = .85$).

3. Experiment 2

Experiment 1 showed that participants were no more likely to trust a partner with whom they had established all conceptual pacts than a partner who had failed to establish some of them. In Experiment 2, we investigated the impact of maintaining or breaking previously established conceptual pacts on participants’ trust, by having them play two rounds of the referential communication task with each partner. In the first round, both partners reused all the referring expressions, thus establishing all conceptual pacts. In the second round, we manipulated whether partners reused all referring expressions (maintaining the conceptual pacts) or not (breaking some of the conceptual pacts). We hypothesized that participants would be more likely to trust a partner who maintains all the conceptual pacts over a partner who breaks some of them. This is because the partner who breaks some previously established conceptual pacts violates an existing commitment and is thus more likely to be perceived as untrustworthy.

3.1. Method

The study was preregistered on OSF (osf.io/tscfv). Participants gave their informed consent before starting the study.

3.1.1. Participants

We recruited 140 participants through Prolific, all adult native English speakers. They were paid 4£ for a 30-min experiment. Due to exclusion criteria (detailed in the “Results” section), the final sample size was 49 participants (23 men, 25 women, 1 not specified, $M_{age} = 37.81$, $SD = 12.17$) in the Epistemic Trust group, and 49 participants (24 men, 24 women, 1 not specified, $M_{age} = 38.43$, $SD = 12.71$) in the Practical Trust group.

3.1.2. Materials

The sets of images used in the referential communication task were identical to those in Experiment 1, except that they contained four (instead of six) familiar objects, for a total of 10 objects.

3.1.3. Design and procedure

The design of Experiment 2 was similar to that of Experiment 1, but included the following important changes: (i) an iterative version of the referential communication task involving a second round with each partner; (ii) a reduced set of objects to make the coordination manipulation more salient; and (iii) two additional trust measures based on ratings (Likert scales),

which complemented the binary measures. Participants were also invited to give comments at the end of the experiment to check whether they guessed that the partners were not real participants.

In Phase 1, we manipulated coordination (Figs. S5 and S6). Participants played two rounds (four trials in total) of the referential communication task with first one partner and then the other. In the first round, both partners were coordinated (reusing all the participants' expressions) to establish conceptual pacts with the participants. In the second round, one partner was coordinated (maintaining all the established conceptual pacts) and the other partner was uncoordinated (breaking three out of six conceptual pacts). In Experiment 2, partners were programmed to not repeat hedging words such as "looking thing" and "thingy" to look more natural (and to avoid the possible effect of this repetition on trust).

In Phase 2, we measured trust. Participants in the Epistemic Trust group were asked to make the same advisor choice (i.e., following an advice concerning which text to type, Fig. S7) of Experiment 1 (they did not have to actually type the text after their choice in Experiment 2). Then, they rated how much they would rely on the advice of each partner in a new game on a 5-point Likert scale from 1 "not at all" to 5 "completely" (Fig. S8).

Participants in the Practical Trust group were asked to make the same partner choice (Fig. S9) as in Experiment 1 (they did not have to actually play another game after their choice in Experiment 2). They then rated how much they would like to play again with each partner in a different game on a 5-point Likert scale from 1 "not at all" to 5 "completely" (Fig. S10). Fig. 3 summarizes the procedure.

3.2. Results

We excluded 36 participants for the same preregistered exclusion criteria as in Experiment 1. We excluded six additional participants who suspected partners were not real. Participants generally used the same (or a similar) description in both rounds.² Data are available on OSF (osf.io/z6n3v/). For the Epistemic Trust group, there was no effect of coordination on advisor choice (55% coordinated partner, 27/49, binomial $p = .57$, Cohen's $g = .05$), but results revealed a significant effect of coordination for the advisor ratings ($M = 3.90$, $M_d = 4$, $SD = 0.96$ for the coordinated partner, $M = 3.37$, $M_d = 4$, $SD = 1.03$ for the uncoordinated partner, $Z = 512.5$, $p = .013$, $r = .46$). For the Practical Trust group, there was a significant effect of coordination on both partner choice (69%, 34/49, binomial $p = .009$, Cohen's $g = .19$) and partner ratings ($M = 4.22$, $M_d = 5$, $SD = 1.14$ for the coordinated partner, $M = 3.33$, $M_d = 4$, $SD = 1.36$ for the uncoordinated partner, $Z = 461$, $p = .005$, $r = .55$).

4. Discussion

The present study investigated the effect of conceptual pacts on trust by manipulating their establishment (Experiment 1) and maintenance versus breaking (Experiment 2). We tested this effect on epistemic trust (following a partner's advice) and practical trust (selecting a task partner). In Experiment 1, when participants played with a coordinated partner that

Phase 1: Coordination manipulation	REFERENTIAL COMMUNICATION TASK	
	<p>Round 1 Trial 1: Director role</p> <p> Trial 2: Matcher role</p> <p>Round 2 Trial 3: Director role</p> <p> Trial 4: Matcher role</p> <p style="text-align: right;">} Partner 1</p>	
	<p>Round 1 Trial 1: Director role</p> <p> Trial 2: Matcher role</p> <p>Round 2 Trial 3: Director role</p> <p> Trial 4: Matcher role</p> <p style="text-align: right;">} Partner 2</p>	
Phase 2: Trust test	EPISTEMIC TRUST GROUP	PRACTICAL TRUST GROUP
	<p style="text-align: center;">Advisor choice:</p> <p>“Here is the advice given by your two previous partners:</p> <p>[x] picked as the easier text: Text 1</p> <p>[y] picked as the easier text: Text 2</p> <p>Which text do you want to type?”</p> <p style="text-align: center;">Advisor rating:</p> <p>“If in a new game, you received a piece of advice from [x/y], how much would you rely on [x/y]’s advice?”</p>	<p style="text-align: center;">Partner choice:</p> <p>“It is a naming game similar to the previous ones, but the objects are more challenging to name.</p> <p>You will play this game with only one of your previous partners. Please choose one partner”</p> <p style="text-align: center;">Partner rating:</p> <p>“If you had to play a new game, how much would you like to play with [x/y]?”</p>

Fig. 3. Procedure of Experiment 2.

established all conceptual pacts and an uncoordinated partner that failed to establish half of them, they did not trust one partner more than the other. However, in Experiment 2, when participants played with a coordinated partner who established and maintained all conceptual pacts versus an uncoordinated partner who broke half of them, the latter was less likely to be trusted than the former.

Our study suggests that establishing and maintaining conceptual pacts generates a sense of commitment, whose violation is detrimental to one’s perceived trustworthiness. Interestingly, when people fail to establish some conceptual pacts, they are not perceived as less trustworthy (Experiment 1). As no implicit agreement or commitment is violated, there may be no reason to distrust the uncoordinated partner. This interpretation is supported by the fact that the partner failing to establish some conceptual pacts was still judged as highly cooperative (though less so than the coordinated partner, Experiment 1, manipulation check). It is only once both

interlocutors have established a conceptual pact that they are expected to keep it, and suffer trust loss if they do not (Experiment 2). This is in line with the observation that the sense of commitment increases when interactions are repeated (Bangerter, Genty, Heesen, Rossano, & Zuberbühler, 2022; Michael, 2022).

Our study has some limitations. First, the partners' expressions were scripted and participants could not directly interact with them. Participants thus did not explicitly agree on conceptual pacts through interactive grounding, as is usually the case in nonscripted referential communication tasks (Brennan & Clark, 1996; Clark & Wilkes-Gibbs, 1986). They rather established conceptual pacts based on more indirect feedback, that is, whether the partner reused the same linguistic expressions. Violation of explicitly established conceptual pacts may have a greater impact on trust. This being said, in real life, people often feel committed and expect others to behave in a certain way when there is no explicit agreement (Michael, 2022), and our study testifies to the extent to which even implicit commitments can have a bearing on interpersonal dynamics. Second, partners were represented by "avatars" (Bugs Bunny vs. Daffy Duck), and although coordination was counterbalanced between cartoon characters, the identity of the partner played a minor role in the binary measure of practical trust (participants were more likely to select Bugs Bunny than Daffy Duck) in Experiment 2 (Complementary analyses). Crucially, though, there was still a main positive effect of coordination for practical trust. Finally, we cannot rule out the possibility that if we had used rating measures in Experiment 1, we might have captured a subtle difference in perceived trustworthiness, even if participants did not feel strongly against one of the two partners.

Despite these limitations, our study contributes to the literature on lexical coordination and trust by highlighting the relevance of the distinction between establishing and maintaining conceptual pacts: while failing to establish conceptual pacts does not appear to affect trust, breaking previously established conceptual pacts has an impact on both epistemic and practical dimensions of trust. Our findings thus go beyond previous correlational work (Scissors et al., 2008, 2009; Taylor & Thomas, 2008) in experimentally demonstrating the effect of lexical coordination on trust. Furthermore, they complement existing experimental data by showing that this effect is not limited to spoken language systems (Linnemann & Jucks, 2018), or human use of positive emotion expressions (Swaab et al., 2011). Rather, this effect extends to coordination with (perceived) human agents that is not bound to specific content or valence, such as maintaining conceptual pacts.

To conclude, our findings have also implications for research on joint commitment by showing the importance of implicit commitments and supporting the idea that a sense of commitment can emerge without explicit agreement (Bangerter et al., 2022; Bonalumi, Michael, & Heintz, 2021; Michael, 2022). They reveal that trust can be compromised by commitment violations even when no explicit promise or contract is broken. Crucially, while previous literature on implicit commitments has mainly focused on nonverbal behaviors (eye gaze, physical coordination, repeated interaction, effort investment, see, e.g., Bangerter et al., 2022; Michael et al., 2016; Siposova, Tomasello, & Carpenter, 2018), we show that, even in the absence of explicit agreements, subtle linguistic choices can lead people to feel committed and to act accordingly. This in turn points to the importance of investigating the wider social effects of lexical entrainment, as well as their potential strategic exploitation. For instance,

our results are relevant to research on human deception. Indeed, recent studies showed that liars tend to coordinate their lexical choices with their interlocutors, even more than truthful speakers (Duran & Fusaroli, 2017; Levitan, Xiang, & Hirschberg, 2018; Tower, Jensen, Dunbar, & Elkins, 2013). These findings have been explained by suggesting that coordination makes deceivers appear more credible and trustworthy, an explanation that converges with our data.

Overall, the present study fills a gap in our understanding of linguistic behavior as an important determinant of perceived trustworthiness, thus calling for stronger integration of linguistic and psychological perspectives in the study of trust (and mistrust).

Notes

- 1 We kept participants who selected the same object twice (originally an exclusion criterion) because novel referential expressions could occasionally apply to more than one object. This decision did not affect the results.
- 2 Some participants changed their referential expressions in a significant way, and excluding these participants from the analysis did not affect the results (Complementary analysis).

References

- Arnold, J. E., Kam, C. L. H., & Tanenhaus, M. K. (2007). If you say thee uh you are describing something hard: The on-line attribution of disfluency during reference comprehension. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33(5), 914–930. <https://doi.org/10.1037/0278-7393.33.5.914>
- Bangerter, A., Genty, E., Heesen, R., Rossano, F., & Zuberbühler, K. (2022). Every product needs a process: Unpacking joint commitment as a process across species. *Philosophical Transactions of the Royal Society B*, 377(1859), 20210095. <https://doi.org/10.1098/rstb.2021.0095>
- Barr, D. J., & Keysar, B. (2002). Anchoring comprehension in linguistic precedents. *Journal of Memory and Language*, 46, 391–418. <https://doi.org/10.1006/jmla.2001.2815>
- Ben-Ner, A., McCall, B. P., Stephane, M., & Wang, H. (2009). Identity and in-group/out-group differentiation in work and giving behaviors: Experimental evidence. *Journal of Economic Behavior & Organization*, 72(1), 153–170. <https://doi.org/10.1016/j.jebo.2009.05.007>
- Bonalumi, F., Michael, J., & Heintz, C. (2021). Perceiving commitments: When we both know that you are counting on me. *Mind & Language*, 37(4), 502–524. <https://doi.org/10.1111/mila.12333>
- Brennan, S. E., & Clark, H. H. (1996). Conceptual pacts and lexical choice in conversation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 22(6), 1482–1493. <https://doi.org/10.1037/0278-7393.22.6.1482>
- Brown-Schmidt, S. (2009). Partner-specific interpretation of maintained referential precedents during interactive dialog. *Journal of Memory and Language*, 61(2), 171–190. <https://doi.org/10.1016/j.jml.2009.04.003>
- Clark, H. H., & Wilkes-Gibbs, D. (1986). Referring as a collaborative process. *Cognition*, 22(1), 1–39. [https://doi.org/10.1016/0010-0277\(86\)90010-7](https://doi.org/10.1016/0010-0277(86)90010-7)
- Clark, H. H., & Bangerter, A. (2004). Changing ideas about reference. In I. A. Noveck & D. Sperber (Eds.), *Experimental pragmatics* (pp. 25–49). Basingstoke: Palgrave Macmillan. https://doi.org/10.1057/9780230524125_2
- Clément, F., Bernard, S., Grandjean, D., & Sander, D. (2013). Emotional expression and vocabulary learning in adults and children. *Cognition & Emotion*, 27(3), 539–548. <https://doi.org/10.1080/02699931.2012.724012>
- Duran, N. D., & Fusaroli, R. (2017). Conversing with a devil's advocate: Interpersonal coordination in deception and disagreement. *PLoS ONE*, 12(6), e0178140. <https://doi.org/10.1371/journal.pone.0178140>

- Einav, S., & Robinson, E. J. (2011). When being right is not enough: Four-year-olds distinguish knowledgeable informants from merely accurate informants. *Psychological Science*, 22(10), 1250–1253. <https://doi.org/10.1177/0956797611416998>
- Elashi, F. B., & Mills, C. M. (2014). Do children trust based on group membership or prior accuracy? The role of novel group membership in children's trust decisions. *Journal of Experimental Child Psychology*, 128, 88–104. <https://doi.org/10.1016/j.jecp.2014.07.003>
- Giamattei, M., Yahosseini, K. S., Gächter, S., & Molleman, L. (2020). LIONESS Lab: A free web-based platform for conducting interactive experiments online. *Journal of the Economic Science Association*, 6(1), 95–111. <https://doi.org/10.1007/s40881-020-00087-0>
- Hawley, K. (2014). Trust, distrust and commitment. *Noûs*, 48(1), 1–20. <https://doi.org/10.1111/nous.12000>
- Hawley, K. (2019). *How to be trustworthy*. Oxford University Press. <https://doi.org/10.1093/oso/9780198843900.001.0001>
- Koenig, M. A., Clément, F., & Harris, P. L. (2004). Trust in testimony: Children's use of true and false statements. *Psychological Science*, 15(10), 694–698. <https://doi.org/10.1111/j.0956-7976.2004.00742.x>
- Koenig, M. A., & Jaswal, V. K. (2011). Characterizing children's expectations about expertise and incompetence: Halo or pitchfork effects? *Child Development*, 82(5), 1634–1647. <https://doi.org/10.1111/j.1467-8624.2011.01618.x>
- Kronmüller, E., & Barr, D. J. (2007). Perspective-free pragmatics: Broken precedents and the recovery-from-preemption hypothesis. *Journal of Memory and Language*, 56, 436–455. <https://doi.org/10.1016/j.jml.2006.05.002>
- Levitan, S. I., Xiang, J., & Hirschberg, J. (2018). Acoustic-prosodic and lexical entrainment in deceptive dialogue. In *Proceedings of the 9th International Conference on Speech Prosody 2018* (pp. 532–536). <https://doi.org/10.21437/SpeechProsody.2018-108>
- Linnemann, G. A., & Jucks, R. (2018). ‘Can I trust the spoken dialogue system because it uses the same words as I do?’—Influence of lexically aligned spoken dialogue systems on trustworthiness and user satisfaction. *Interacting with Computers*, 30(3), 173–186. <https://doi.org/10.1093/iwc/iwy005>
- Mascaro, O., & Sperber, D. (2009). The moral, epistemic, and mindreading components of children's vigilance towards deception. *Cognition*, 112(3), 367–380. <https://doi.org/10.1016/j.cognition.2009.05.012>
- Mazzarella, D., Reinecke, R., Noveck, I., & Mercier, H. (2018). Saying, presupposing and implicating: How pragmatics modulates commitment. *Journal of Pragmatics*, 133, 15–27. <https://doi.org/10.1016/j.pragma.2018.05.009>
- Metzing, C., & Brennan, S. E. (2003). When conceptual pacts are broken: Partner-specific effects on the comprehension of referring expressions. *Journal of Memory and Language*, 49(2), 201–213. [https://doi.org/10.1016/S0749-596X\(03\)00028-7](https://doi.org/10.1016/S0749-596X(03)00028-7)
- Michael, J. (2022). *The philosophy and psychology of commitment*. Taylor & Francis.
- Michael, J., Sebanz, N., & Knoblich, G. (2016). Observing joint action: Coordination creates commitment. *Cognition*, 157, 106–113. <https://doi.org/10.1016/j.cognition.2016.08.024>
- Pesch, A., & Koenig, M. A. (2018). Varieties of trust in preschoolers' learning and practical decisions. *PLoS ONE*, 13(8), e0202506. <https://doi.org/10.1371/journal.pone.0202506>
- Pillow, B. H. (1989). Early understanding of perception as a source of knowledge. *Journal of Experimental Child Psychology*, 47(1), 116–129. [https://doi.org/10.1016/0022-0965\(89\)90066-0](https://doi.org/10.1016/0022-0965(89)90066-0)
- Pozzi, M., & Mazzarella, D. (2023). Speaker trustworthiness: Shall confidence match evidence? *Philosophical Psychology*. <https://doi.org/10.1080/09515089.2023.2193220>
- Ronfard, S., & Lane, J. D. (2019). Children's and adults' epistemic trust in and impressions of inaccurate informants. *Journal of Experimental Child Psychology*, 188, 104662. <https://doi.org/10.1016/j.jecp.2019.104662>
- Scissors, L. E., Gill, A. J., & Gergle, D. (2008). Linguistic mimicry and trust in text-based CMC. In *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work* (pp. 277–280). <https://doi.org/10.1145/1460563.1460608>
- Scissors, L. E., Gill, A. J., Geraghty, K., & Gergle, D. (2009). In CMC we trust: The role of similarity. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 527–536). <https://doi.org/10.1145/1518701.1518783>

- Siposova, B., Tomasello, M., & Carpenter, M. (2018). Communicative eye contact signals a commitment to cooperate for young children. *Cognition*, *179*, 192–201. <https://doi.org/10.1016/j.cognition.2018.06.010>
- Swaab, R. I., Maddux, W. W., & Sinaceur, M. (2011). Early words that work: When and how virtual linguistic mimicry facilitates negotiation outcomes. *Journal of Experimental Social Psychology*, *47*(3), 616–621. <https://doi.org/10.1016/j.jesp.2011.01.005>
- Taylor, P. J., & Thomas, S. (2008). Linguistic style matching and negotiation outcome. *Negotiation and Conflict Management Research*, *1*(3), 263–281. <https://doi.org/10.1111/j.1750-4716.2008.00016.x>
- Tenney, E. R., MacCoun, R. J., Spellman, B. A., & Hastie, R. (2007). Calibration trumps confidence as a basis for witness credibility. *Psychological Science*, *18*(1), 46–50. <https://doi.org/10.1111/j.1467-9280.2007.01847.x>
- Tenney, E. R., Spellman, B. A., & MacCoun, R. J. (2008). The benefits of knowing what you know (and what you don't): How calibration affects credibility. *Journal of Experimental Social Psychology*, *44*(5), 1368–1375. <https://doi.org/10.1016/j.jesp.2008.04.006>
- Tenney, E. R., Meikle, N. L., Hunsaker, D., Moore, D. A., & Anderson, C. (2019). Is overconfidence a social liability? The effect of verbal versus nonverbal expressions of confidence. *Journal of Personality and Social Psychology*, *116*(3), 396. <https://doi.org/10.1037/pspi0000150>
- Tower, D. L., Jensen, M. L., Dunbar, N. E., & Elkins, A. C. (2013). Don't lie to me: The impact of deception on vocalic and linguistic synchrony. In *2013 European Intelligence and Security Informatics Conference* (pp. 262–265). IEEE. <https://doi.org/10.1109/EISIC.2013.67>
- Vullioud, C., Clément, F., Scott-Phillips, T., & Mercier, H. (2017). Confidence as an expression of commitment: Why misplaced expressions of confidence backfire. *Evolution and Human Behavior*, *38*(1), 9–17. <https://doi.org/10.1016/j.evolhumbehav.2016.06.002>

Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Figure S1
Figure S2
Figure S3
Figure S4
Figure S5
Figure S6
Figure S7
Figure S8
Figure S9
Figure S10
Supplementary Materials