Case Report

Dynamic distance: Use of visual and verbal means of communication as social signals☆,☆☆

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ABSTRACT

Across seven studies, we investigated how people's motivation to signal a proximity or distance orientation affects their choice of visual versus verbal means of communication. To explore this question we asked people to communicate using visual or verbal means of representation within diverse contexts (friendship: Studies 1a–1b, 4, and 5, workplace interactions: Studies 2a–2b, and professional websites: Study 3). Across all studies we found that people prefer visual (versus verbal) means of communication when aiming to signal a proximity rather than distance orientation towards the recipient of the message. More broadly, we suggest that people are active agents who use different mediums in a strategic way (conscious or not) in order to *dynamically influence* distance: visual representations are used to signal preference to reduce distance, and verbal representations to signal preference to increase distance.

1. Introduction

One of the most important developments in human history was the transition from visual to linguistic communication (Corballis, 2014; Suddendorf & Corballis, 2010). Despite the dominance of language, however, modern society did not abandon visual communication altogether. Rather, an unprecedented variety of visual means of communication are widely used today to supplement linguistic communication: People video chat, add emojis (pictorial representations of objects), emoticons (emotional faces), and photographs to their messages, and engage in visual storytelling on platforms such as Instagram. What affects people's decision regarding which medium of communication to use? Although this decision may be constrained by factors such as the ease of generating a visual versus verbal message and the message's complexity, it is often the case that people have some flexibility in their choice. Such leeway leaves room for systematic variation in people's communication, and the possibility that some forms of communication may serve different purposes.

Prior research identified psychological distance – the egocentric distance between a communicator and recipient – as one important

factor influencing the choice of visual and verbal communication. For example, Amit, Wakslak, and Trope (2013) showed that people increasingly choose to use visual means of representation over verbal means of representation the more (temporally, socially, or geographically) proximal the recipient of the message was. Amit et al. (2013) argued that the unique characteristics of visual and verbal representations make them particularly suitable to communicate with proximal and distal others, respectively (see also Amit et al., 2019). Pictures are concrete representations that resemble their referent objects; as such, they are more suitable for communication with proximal social partners for whom concrete, incidental details will be relevant and understandable. In contrast, words are abstract representations that have an arbitrary relationship with their corresponding objects, preserving the gist of information but omitting incidental details. Words thereby enable shared reality with distal social partners for whom a concrete picture that includes incidental details may be less relevant or understandable (see Trope & Liberman, 2010, for a fuller treatment of Construal Level Theory (CLT), which broadly argues for a distance/abstraction relationship).

Notably, in all the experiments in the above research (and,

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similarly, in many other CLT-informed investigations of the impact of distance on communication; e.g., Joshi & Wakslak, 2014; Joshi, Wakslak, Raj, & Trope, 2016; Stephan, Liberman, & Trope, 2010), psychological distance was manipulated as a *static* feature of the world. However, in real life people often wish to *regulate* the distance between themselves and target objects, events, and other people. For example, people might wish to reduce the distance between themselves and loved ones who live far away, or to increase the distance between themselves and a person who would take advantage of them. In such contexts people may want to send signals to the other person of the relative amount of distance/proximity they desire; that is, individuals may dynamically enact and signal distance, rather than only passively react to it.

Indeed, alternative streams of research on distance broadly suggest the appropriateness of a more dynamic perspective. Returning to the classic notion that distance is not just something that exists, but something people perceive and enact in a motivated fashion (Goff, Steele, & Davies, 2008), researchers have recently explored a variety of ways that motivation interacts with distance, focusing especially on distance perception. For example, people perceive objects as closer when they are desirable (Balcetis & Dunning, 2010), and farther away when they are disgusting (Siegel, Walker, & Stefanucci, 2009), threatening (Cole, Balcetis, & Dunning, 2013), or when having dispositions such as fear of heights (Clerkin, Cody, Stefanucci, Proffitt, & Teachman, 2009; Teachman, Stefanucci, Clerkin, Cody, & Proffitt, 2008).

Adopting a dynamic perspective on distance, in the current research we propose that distance motivations shape the nature of signals people elect to communicate with others. Because pictures are associated with proximity, and words with distance, a communicator might see the sending of visual [verbal] messages as a method for invoking proximity [distance]. That is, we argue that people will use means of re-presentations that are congruent with their distance goals (i.e., visual representations to signal a proximity orientation, and verbal representations to signal a distance orientation), even when those goals are incongruent with their existing distance from the recipient of the message.

2. Overview of studies

Seven studies investigated the effect of distance motivation on choice of visual versus verbal communication, across varied contexts and operationalizations of visual and verbal communication, as well as more explicit (Studies 1–3) and implicit (Studies 4–5) manipulations of motivation to signal proximity/distance. Notably, given that most adult communication involves language (Chomsky, 1965; Suddendorf & Corballis, 2010) and visual representations are primarily used to supplement rather than fully replace linguistic communication, we primarily contrasted a "verbal only" condition with "verbal + visual"

condition. Across studies we set target sample sizes at 100 per cell (providing 80% power to detect effects of $d = 0.4$, the typical effect size in social/personality psychology; Richard, Bond Jr, & Stokes-Zoota, 2003); deviations are a result of over or under-filling. All studies were preregistered on aspredicted.org, with demographics collected after the main study. We report all measures, manipulations, and exclusions in the studies.

3. Study 1a: visual versus verbal communication modes

Participants considered a friend with whom they would like to increase or decrease distance, and indicated their communication preferences. We expected proximal (versus distal) motivation participants to select more visual (e.g., Skype call) rather than verbal means of communication (e.g., phone call).

3.1. Method

3.1.1. Participants

One-hundred and ninety-eight Amazon Mechanical Turk (MTurk) workers completed an online survey. Per preregistered exclusion criterion, we excluded three participants with duplicate IP addresses, for a final sample of 195 ($n_{\text{proximal}} = 99$; $n_{\text{distal}} = 96$; 90 males; $M_{age} = 38.14$, $SD = 11.74$).

3.1.2. Materials and procedure

Participants imagined a close friend from whom they had recently started to grow apart, reading (distance motivation in brackets): "You decide it's best to try to get closer to them [distance yourself from them]. Increasing your intimacy [distance] is a natural part of any friendship."

Participants then indicated what means of communication they might use to communicate with this friend on a series of four items, where one option contained a visual element and the other was only verbal (text with picture versus text with only words; email with picture message versus email with only words; video chat (i.e., FaceTime, Skype, etc.) versus phone call; picture message versus written message; order of items randomized).

3.2. Results and discussion

We dummy coded the items (0 = verbal; 1 = visual) and summed across the items to create a measure of overall preference for visual versus verbal communication (range 0–4; $M = 0.75$). As expected, there was a greater preference for visual communication in the proximal ($M = 1.21$, $SD = 1.37$) than the distal condition ($M = 0.28$, $SD = 0.64$); $t(193) = 6.03$, $p < .001$, $d = 0.87$ (see Fig. 1; for item-by-item analyses, see Supplemental material), providing initial support
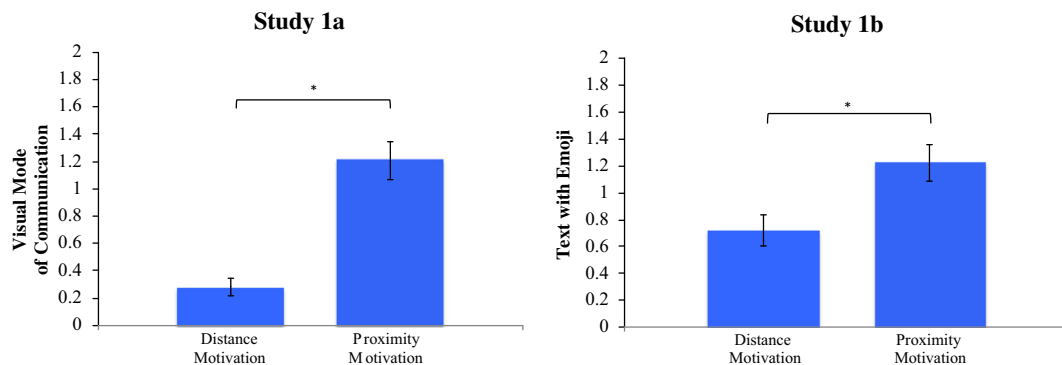

Fig. 1. Preference for visual communication across Studies 1a and 1b.
Across two different operationalizations of verbal versus visual communication, participants were more likely to select visual modes of communication and text messages with emoji (vs. without) when they were motivated to create proximity (vs. distance).

that motivation to increase proximity (vs. distance) increases preference for visual (vs. verbal) communication.

4. Study 1b: emoji usage in text responses

Study 1b sought to conceptually replicate Study 1a with a different operationalization of visual versus verbal communication – inclusion of an emoji in a text message.

4.1. Method

4.1.1. Participants

Two-hundred and five MTurk workers completed an online survey. Per the preregistered exclusion criterion, we excluded four participants with duplicate IP addresses, for a final sample of 201 ($n_{proximal}$ = 100; n_{distal} = 101; 110 males; M_{age} = 37.71, SD = 12.27).

4.1.2. Materials and procedure

Participants considered the same friendship scenario (and manipulation) as in Study 1a. They then indicated how they would respond to a message from this friend on a series of three items (order randomized), where one option included a visual element (i.e., an emoji) and the other was verbal (i.e., standard text message, no emoji; see Fig. 2). We used emojis that did not communicate emotions of the communicator (e.g., smileys), but rather were a visual representation of the content of the text (a party popper, soccer ball, and microphone respectively).

4.2. Results and discussion

We dummy coded each item (0 = verbal; 1 = visual) and summed these to create a measure of overall preference for visual versus verbal communication (range: 0–3; M = 0.97). As predicted, preference for visual communication was greater in the proximal condition (M = 1.22, SD = 1.36) than the distal condition (M = 0.72, SD = 1.12); t (199) = 2.84, p = .005, d = 0.40 (see Fig. 1; for item-by-item analyses, see Supplemental material), consistent with an effect of proximity (distance) motivation on preference for visual (vs. verbal) communication.

5. Study 2a: visual versus verbal workplace communication

Studies 2a–2b sought to provide converging evidence using a different context. Participants indicated how they would choose to communicate with a hypothetical new employee with whom they were

trying to increase or decrease distance as a manager. We predicted that those in the proximity (vs. distance) motivation condition would be more likely to select a visual means of communication (e.g., a visual biographical PowerPoint) rather than verbal means of communication (e.g., a list of biographical bullet points).

5.1. Method

5.1.1. Participants

Two-hundred and three MTurk workers completed an online survey. Per preregistered exclusion criteria, we excluded three participants with duplicate IP addresses, for a final sample of 200 ($n_{proximal}$ = 99; n_{distal} = 101; 103 males; M_{age} = 34.15, SD = 10.80).

5.1.2. Materials and procedure

Imagining they were a manager, participants were told (distance condition in brackets): "As a manager, you need to be sure to establish closeness with [distance from] your employees, because it is important to maintain connection [division] between you and your subordinates."

Participants read that they were preparing for a first meeting with a new employee and were preparing a quick biography to send to the employee, which they could send as a written biography or visual slide deck (see Fig. 3). In addition to choice, we also measured relative preference for the options (1 = *would definitely send the visual biography*, 7 = *would definitely send the written biography*).

5.2. Results and discussion

75.3% of participant in the proximal condition selected the visual biography, compared to only 52% of those in the distal condition, X^2 (1, N = 197) = 11.48, p = .001. A similar preference emerged on the continuous measure: There was a relative preference for the visual biography in the proximal (M = 3.28, SD = 2.07) compared to the distal condition (M = 4.20, SD = 2.31); t(198) = 2.95, p = .004, d = 0.42.

6. Study 2b: replication in a manager-employee simulation

Studies 1–2a used hypothetical scenarios. In Study 2b we aimed to replicate Study 2a's findings using actual communication choices. Participants read that they and another MTurk worker were being paired together, with themselves assigned to the manager role and the other worker to the role of a new employee. We then asked participants to share biographical information with the other worker by selecting from choices in four categories (i.e., favorite color, sport, cuisine,
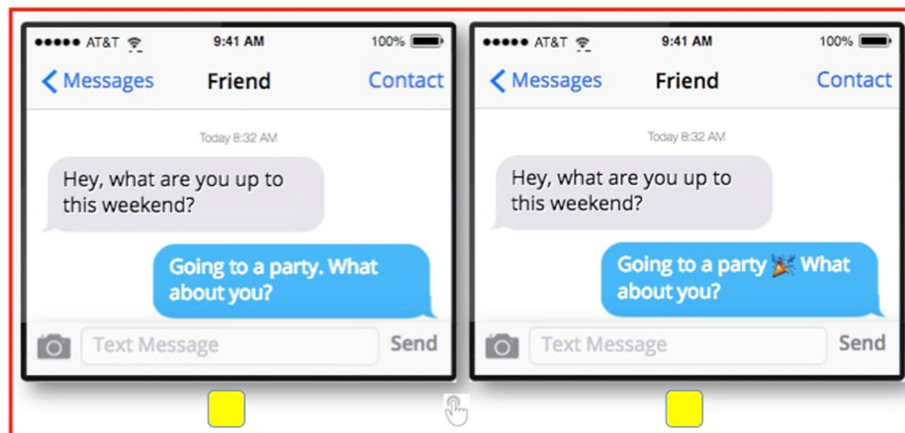

Fig. 2. Sample stimuli for Study 1b.
Participants in Study 1b were asked to imagine they would like to either 1) distance themselves or 2) get closer to a friend. Then they were asked to reply to a text message from said friend, by choosing one option out of a pair. There were three pairs in total.
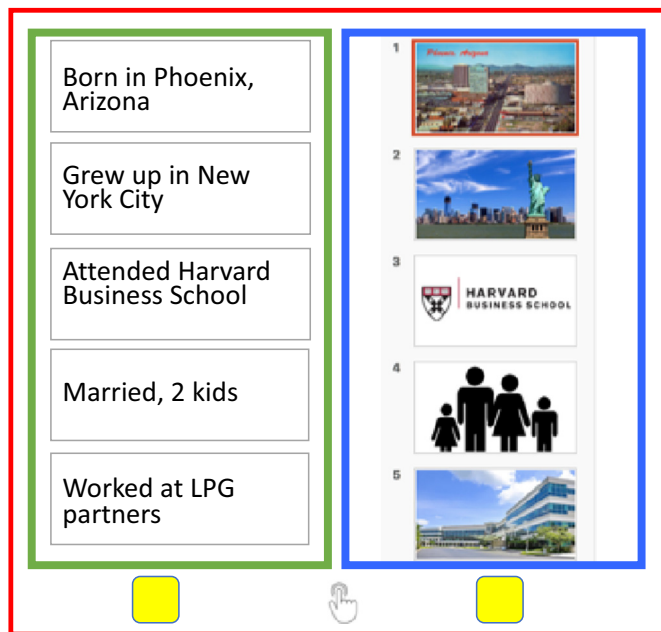
Fig. 3. Stimuli for Study 2a.
Participants imagined they were managers at a company and they were sending a biography to a new employee with whom they should establish closeness with or distance from. Then, participants chose one type of biography out of two options: One pictorial and one verbal.

season). Each choice was represented by a word and picture. Participants chose to send the information either as a visual or verbal biography. We predicted that participants in the proximity motivation (vs. distance motivation) condition would be more likely to choose the visual (vs. verbal) biography.

6.1. Method

6.1.1. Participants

Two-hundred and one MTurk workers completed an online survey. Per our preregistered exclusion criteria, we excluded three participants with duplicate IP addresses and excluded 29 people who failed an attention check[1] (i.e., did not remember information regarding our key manipulation) for a final sample of 169 ($n_{proximal}$ = 85, n_{distal} = 84; 90 males; M_{age} = 35.63, SD = 11.69).

6.1.2. Materials and procedure

After being assigned the role of "manager" and being told they would be randomly paired up with another MTurk worker to mimic online interaction, participants were told that given online workers are far from one another, it is important for people to compensate for that distance and try to create a sense of proximity (proximity motivation condition) or to respect that distance and not try to create a false sense of closeness (distance motivation condition; see exact prompts in Supplemental material).

Participants were then told they would begin by role-playing a first meeting with their employee, and to answer a series of four questions according to what was true for them in preparation for that meeting (see Fig. 4). For example, participants indicated their favorite color by

selecting from a set of four options in which each option contained a textual description (e.g., "Blue") and a visual description (e.g., a blue-colored square). Then, participants were told that their information could be shared in one of two ways and selected which option they preferred: A visual biography (i.e., a series of images, one for each of their responses) or a written biography (i.e., a series of bullet points, one for each of their responses). Participants then completed an exploratory message creation measure (see Supplemental material) and a filler task to fit the cover story (e.g., receipt of the verbal biography from their partner and evaluating that person).

6.2. Results and discussion

As expected, participants were more likely to select the visual biography in the proximal condition (91.7%) compared to the distal condition (77.6%), X^2 (1, N = 169) = 6.38, p = .012, conceptually replicating our earlier findings in a non-scenario based context.

7. Study 3: choice of web-content

Studies 1 and 2 support a relationship between distance motivation and communication choices with a specific recipient. Study 3 replicates and extends these results using the context of professional website design, a naturalistic context where people typically vary in their use of pictures and words, and communicate with a broad potential audience rather than a single identified message recipient. Study 3 also examines choices made on behalf of someone else, which are arguably more directly about signaling intentions compared to self-relevant decisions (which may potentially reflect internalized subjective distance rather than signaling intentions).[2]

Finally, Experiment 3 explored the role of perceived formality of pictures and words in their ability to decrease or increase distance. Pictures and words can each vary in their level of formality, but pictures might be perceived as less formal than language; this may therefore play a role in why pictures are presumed to signal proximity, although the effect of distance motivation may also be unique from any effect of intended formality. To explore whether formality accounts (either fully or partially) for the current effects, we measured intended formality. Of note, we consider this analysis only speculative, given that a number of alternative models are also plausible (e.g., other unmeasured factors, alternative measures of intended formality, reverse causality in which participants' choice of communication influences their response to the formality measure, etc.).

7.1. Method

7.1.1. Participants

Two-hundred and six MTurk workers completed an online survey. Per the preregistered exclusion criterion, we excluded seven participants with duplicate IP addresses, for a final sample of 199 ($n_{proximal}$ = 101, n_{distal} = 98; 104 males; M_{age} = 34.21, SD = 11.17).

7.1.2. Materials and procedure

Participants imagined they were setting up a website for a cardiologist who explains that he believes there needs to be a sense of proximity [distance] in the doctor-patient relationship, and that it is important to him for patients to understand and appreciate his desire for proximity [distance] because this achieves the best medical care. Participants then proceeded to the next page to start setting up their website. They were first asked to decide between a website with "mostly images on the page" (visual choice) or "mostly text on the

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[1] This was the only study where we included an attention check of this sort, which we did because of the simulation nature of the study. However, we inadvertently omitted this exclusion criterion in the preregistration. When we include these respondents, the condition differences remained significant; 90% chose the visual biography in the proximal condition compared to 79.6% in the distal condition, X^2 (1, N = 198) = 4.17, p = .041.

[2] We note, however, that this does not fully rule out this alternative explanation, because it is possible the respondent could internalize the other person's subjective experience of distance in working on that person's behalf.
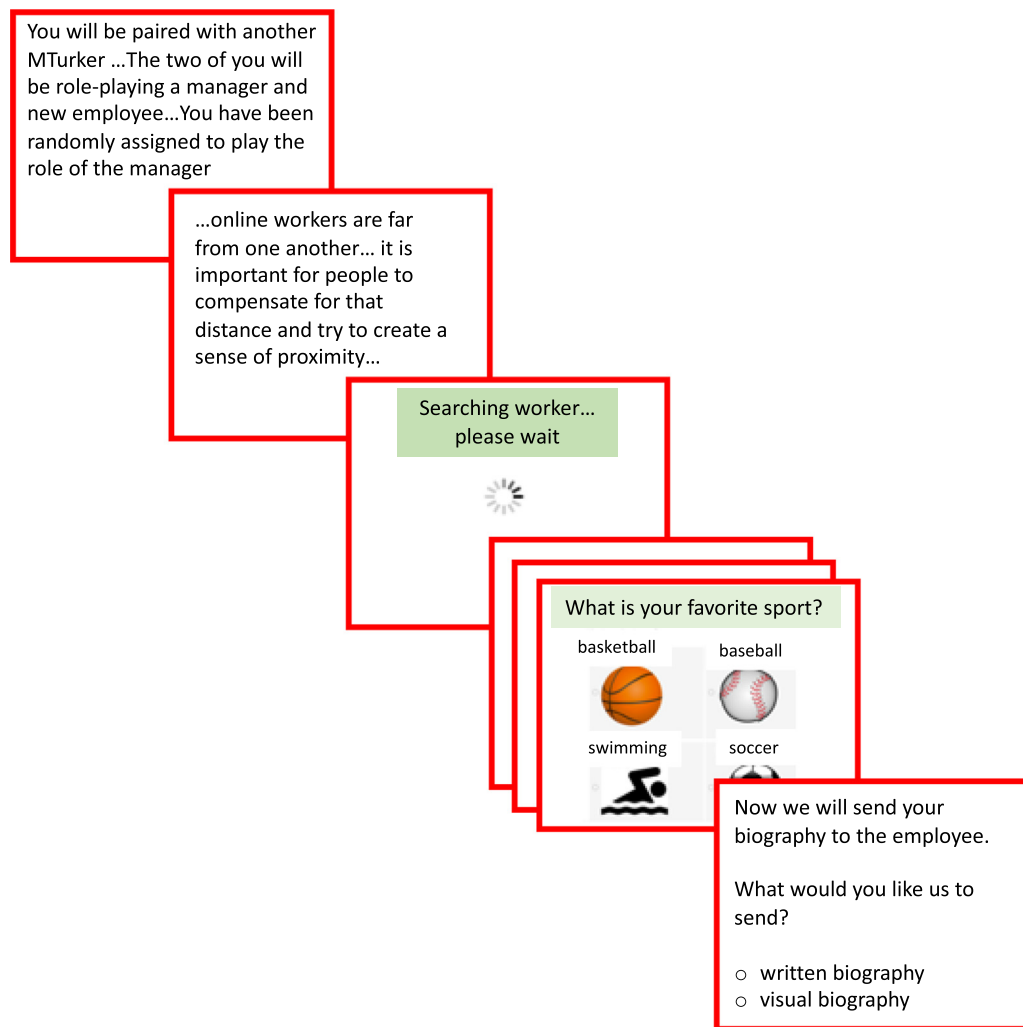
Fig. 4. Study design for Study 2b.
Participants in Study 2b were ostensibly paired with another MTurk worker to role-play a manager-employee interaction in which they would be the manager and should either 1) try to create proximity with or 2) keep distance from their employee. Then, they answered a series of questions about themselves and chose to send this information to their partner as either a visual or written biography.

page" (verbal choice). They also selected a color scheme and titled the website. Then, participants indicated how formal they envisioned the website looking once it is complete on a scale that ranged from 1 (*not formal at all*) to 7 (*very formal*).

7.2. Results and discussion

As expected, participants were more likely to select the website with mostly images in the proximal condition (79.6%) than the distal condition (47.5%), X^2 (1, $N = 199$) = 22.02, $p < .001$. There was also a significant difference in anticipated formality, $M_{distal} = 5.77$, $SD_{distal} = 0.99$, $M_{close} = 4.41$, $SD_{close} = 1.33$, $t(178.97) = 8.19$, $p < .001$ (Levene's test was significant so degrees of freedom are adjusted).

We next explored whether expected formality mediates the effect of distance motivation on medium preference, using bootstrapping procedures for estimating direct and indirect effects (Process Macro Version 2.15, Model 4; Hayes, 2012). Distance motivation predicted expectation of formality, $b = -1.36$, $SE = 0.17$, $p < .001$. Regressing medium preference on formality and distance motivation revealed a significant effect of formality, $b = -0.40$, $SE = 0.15$, $p = .007$, and also a direct effect of distance motivation, $b = 0.99$, $SE = 0.36$, $p = .005$. The 95% bias-corrected confidence intervals for the indirect

effect through formality (0.12 to 1.10) did not include zero, indicating a significant indirect effect of distance motivation on medium preference through formality (point estimate = 0.55). This pattern of findings suggests partial mediation such that the total effect of distance motivation on medium preference ($b = 1.46$, $SE = 0.32$, $p < .001$) was reduced with inclusion of formality as a mediator, but a significant direct effect of distance motivation remained. In other words, formality partially (but not fully) explained the effect of distance motivation on medium preference.[3]

8. Study 4: communication with a desired/undesired new connection

Studies 1–3 showed that an explicit intention or motivation to signal proximity (vs. distance) with a recipient increases use of visual (vs. verbal) communication. However, the explicit manipulations we used might create demand effects; therefore Study 4 aimed to manipulate the nature of the relationship with the recipient rather than explicitly instructing participants to adopt a distance or proximity motivation. In

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[3] Again, however, this analysis is by no means definitive, given limitations of a statistical mediation approach in this context and alternative models we did not explore.

addition, we included measures of participants' concern about being misunderstood by the recipient and feelings of comfort in communicating with this person, as these represent alternative reasons that our manipulation may be associated with utilization of visual (vs. verbal) modes of communication. Lastly, we included an exploratory control condition in which participants were not given information about their prior impression of the recipient to explore participants' natural proximity-tendencies and general inclination use visual (vs. verbal) modes of communication in this context.

8.1. Method

8.1.1. Participants

Three-hundred and one Prolific workers completed an online survey (see Peer, Brandimarte, Samat, & Acquisti, 2017, for a description of Prolific). There were no duplicate IP addresses so we made no exclusions[4] ($n_{\text{proximity-motivation}} = 101$, $n_{\text{distance-motivation}} = 99$, $n_{\text{no-goal}} = 101$; 139 males; $M_{age} = 34.06$, $SD = 11.01$).

8.1.2. Materials and procedure

Participants read a scenario in which they met a new person at a dinner. We manipulated distance motivation by indicating that the subject either did or did not enjoy this first brief meeting. Participants in the control condition only read that they met the new person. Participants then completed the same message choice task from Study 1b. Next, participants responded to six items designed to assess their perceptions of communication with this new person, including potential for misunderstanding (e.g., "I feel this person has a high chance of misunderstanding me"; "I am concerned about this person misinterpreting me", "I have confidence that this person will interpret my message accurately (reversed)"; α = 0.90) and communication comfort (e.g., "Communicating with this person feels safe", "Communicating with this person feels comfortable", "Communicating with this person feels risky (reversed)"; α = 0.89).

8.2. Results and discussion

As in Study 1b, we dummy coded the forced choice emoji items (0 = non-visual; 1 = visual) and summed across these to create a measure of overall visual preference (range: 0–3; $M = 0.49$). A one-way ANOVA suggested there were significant differences across conditions, $F(2, 298) = 5.68$, $p = .004$. Follow-up LSD tests revealed a greater preference for visual communication in the proximity-motivation condition ($M = 0.64$, $SD = 1.04$; $n = 101$) than the distance-motivation condition ($M = 0.23$, $SD = 0.67$; $n = 99$); $p = .002$, $d = 0.47$ (see Fig. 5; for item-by-item analyses, see Supplemental material). Participants also communicated more visually vs. verbally in the control condition ($M = 0.57$; $SD = 1.01$; $n = 101$) compared to the distance-motivation condition, $p = .009$, $d = 0.40$; the control condition did not differ from the proximity-motivation condition, $p = .594$. This suggests, potentially, that people's natural default mode of approach in new relations is more proximity-oriented (Amit, Hoeflin, Hamzah, & Fedorenko, 2017), and that the distance motivation condition was more distinct in this context. However, we note that even in the proximity (and control) conditions people still favored verbal communication overall relative to visual communication, consistent with the aforementioned widespread dominance of language. Thus, put together, one interpretation of our findings is that the dominance of language in modern civilization implies that language itself is not so much a "distance signal," but, rather, visual communication may be used to signal relatively more or less proximity. In the context considered in Study 4,
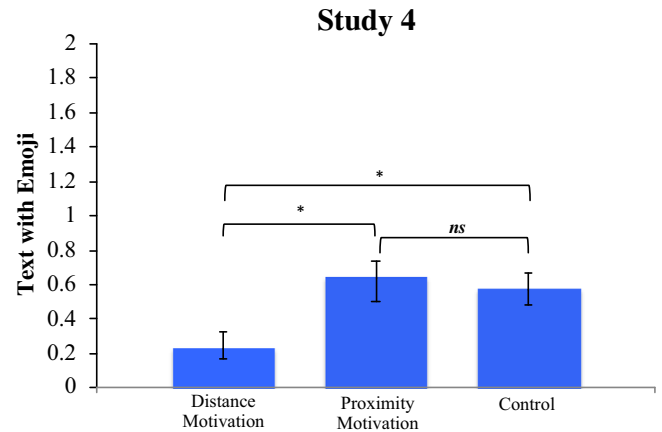
Fig. 5. Preference for visual communication across condition in Study 4. Participants were more likely to select text messages with emoji (vs. without) when they were motivated to create proximity (vs. distance).

people overall may presume a proximal intent, using pictures to a similar degree when given minimal information or told explicitly that their prior interaction was positive.

We also explored whether felt risk of misinterpretation or less comfort in communicating with the recipient might explain the current findings. It is plausible that visual communication is perceived by people as riskier and more open to misinterpretation than verbal communication, and may therefore be preferred more when people are comfortable communicating with a message recipient; this argument suggests a different set of reasons for an association between our distance manipulation and visual message preference. Indeed, participants felt less risk of misinterpretation and more perceived comfort in both the proximity-motivation condition ($M_{risk} = 2.11$, $SD_{risk} = 1.17$; $M_{comfort} = 5.40$, $SD_{comfort} = 1.20$) and control condition ($M_{risk} = 2.19$, $SD_{risk} = 1.34$; $M_{comfort} = 5.24$, $SD_{comfort} = 1.31$) compared to the distance-motivation condition ($M_{risk} = 2.96$, $SD_{risk} = 1.66$; $M_{comfort} = 4.12$, $SD_{comfort} = 1.40$; $p < .001$ for both) but did not differ between the proximity-motivation and control condition, $p = .676$. This is not surprising given past work demonstrating the affective consequences of distance (e.g., Van Boven, Kane, McGraw, & Dale, 2010; Williams, Stein, & Galguera, 2013). However, communicating more visually vs. verbally was not significantly correlated with increased perceptions of risk of misinterpretation, $r = 0.09$, $p = .13$, or comfort in communicating with the recipient, $r = 0.06$, $p = .291$, suggesting that these factors are unlikely to be driving the current findings.

9. Study 5: dynamic distance vs. static distance

Studies 1–4 show that motivation to signal proximity (vs. distance) with a recipient increases the use of visual (vs. verbal) communication regardless of whether distance motivation is manipulated explicitly or via valence towards the recipient. Our intention with this work is to provide evidence for how people dynamically influence their sense of distance with a recipient through their mode of communication. In this final study, we attempt to directly compare dynamic vs. static distance in order to get an initial sense of which type of distance more strongly influences communication with a recipient.

9.1. Method

9.1.1. Participants

One-hundred and one Prolific workers completed an online survey. There were no duplicate IP addresses nor outliers so we made no exclusions (51 males; $M_{age} = 31.24$, $SD = 12.32$).

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[4] We also pre-registered that we would additionally report results with exclusion of any statistical outliers. Removing outliers does not change the pattern of our results (see full analysis in Supplemental material).

9.1.2. Materials and procedure

Participants read a scenario in which they have a close friend with whom they recently had a disagreement over where to eat. We intentionally chose a close friend and a trivial argument in order to provide a natural and common context for both proximity and distance motivations and enable variation in participant responses.

After reading the scenario, participants responded to a series of six items designed to assess their perception of 1) felt closeness vs. distance (i.e., static distance), 2) desire to be close vs. distant (i.e., distance motivations), and 3) intention to signal closeness vs. distance with the recipient (i.e., signaling distance motivations). For each construct we asked one question about closeness, and a similarly-framed question about distance (e.g., "To what degree would you want to create a sense of closeness [distance] with your friend, after the argument was over?"[5]). We intended to create two-item scales, but the reliability for these scales was not high, ($\alpha = 0.49$ to 0.79) so we analyze each item individually. After responding to the distance items, participants completed the message choice task from Study 1b to measure their verbal/visual preference.

9.2. Results and discussion

We dummy coded the emoji items (0 = non-visual; 1 = visual) and summed across these to create a measure of overall preference for visual communication (range: 0–3; $M = 0.92$). We explored how felt closeness/distance, desire to be close/distant and intention to signal closeness/distance was related to our dependent variable of overall emoji usage using a correlation test (Table 1). Neither feeling close nor feeling distant were significantly correlated with visual preference, ps > 0.219. However, desire to be close and intention to signal closeness were positively correlated with visual preference, $r = 0.31$, $p = .002$ and $r = 0.25$, $p = .013$, respectively. Lastly, desire to be distant was significantly and negatively correlated with visual preference, $r = -0.23$, $p = .021$, whereas intention to signal distance was not, $p = .852$.[6] Together, these findings suggest that *experienced* proximity was not reliably related to communication medium preference, but *desired* proximity was.

10. General discussion

The current research shows that people selectively use visual and verbal means of communication in order to signal their proximity or distance orientation towards a message recipient. We found this effect across varied contexts, including informal friendship relationships (Studies 1a–1b, Studies 4 and 5), work-related interactions (Studies 2a–2b) and professional websites (Study 3). Similar effects were present for both hypothetical scenarios as well as a more realistic context, and for contexts where we explicitly prompted a proximity/distance orientation or when we did so more implicitly. In addition, we further found in Study 3 suggestive evidence that intended formality partially mediated the effects of distance motivation on the choice of medium of communication.

More broadly, our findings suggest that people use different means of communication in a strategic way (conscious or not) in order to *dynamically influence* the psychological distance between themselves

and others. In doing so, our work contributes to a large literature exploring the broad influence of distance on communication (e.g., Joshi et al., 2016; Russo, 1975; Stephan et al., 2010). According to our view, people are not just reactive to their actual distance from others (Amit et al., 2013). Rather, they are *active agents*, who are motivated and able to act on their distance related motivation. Intriguingly, prior work considered implications of static distance within the context of communication with a stranger; in such contexts, static and dynamic distance are arguably aligned. In contrast, the current Study 5 considered communication with a friend with whom one had an argument, a context that we expected to distinguish static and dynamic distance. Measuring both perceived and desired distance/proximity, we found that *desired* distance/proximity more reliably related to choice of visual communication, but perceived distance did not. Future research should continue to disentangle these two constructs, and consider contexts under which one might have a more dominant effect.

10.1. Limitations and future directions

In the current studies we focus on visual versus verbal communication (Amit et al., 2017; Amit, Algom, & Trope, 2009; Rim et al., 2015) in the realm of interpersonal social distance. Future research might explore whether people similarly use visual versus verbal communication to act on other distance-related motivation (e.g., to create a sense of temporal or geographical proximity). Additionally, despite being distinct categories, there is obviously great variance within verbal and visual communication, and an intriguing question is whether variation within medium is sensitive to motivation. For example, the content of pictures varies considerably, and future research might explore whether some types of pictures (e.g., lighthearted or humorous pictures) are especially used to signal proximity. Another key question is whether proximity motivation will impact level of linguistic abstraction. Specific aspects of abstract and concrete language might make this relationship more complex. For example, abstract language may be more personally revealing than corresponding concrete language (Eyal, Sagristano, Trope, Liberman, & Chaiken, 2009; Vallacher & Wegner, 1989), and such forms of abstract language might therefore be used to express a proximity rather than distance orientation. Future research is needed to better understand these potential complexities, and more generally, to understand whether other communication aspects correlated with distant communication (such as politeness (Stephan et al., 2010) and eye contact (Russo, 1975)) are used by individuals not only in a reactive way but also to signal their desired distance/proximity to others.

Another intriguing question is how verbal versus visual communication impacts a message recipient. The main focus of the current studies was the communicator's behavior. An important complimentary question is how this behavior is perceived by the recipient. We suspect that the answer to this may be complex. For example, although communicators may be aware of the options they had available to send a message, message recipients may not and therefore may fail to appreciate the meaning of the signal. Thus, while message senders think they are effectively communicating their distance motivation, recipients may fail to appreciate this message. Future research is needed in order to measure the effectiveness of mediums of communication in signaling distance goals.

10.2. Conclusion

People make decisions about including (vs. excluding) visual communication on a daily basis. The current findings suggest that people increasingly turn to visual modes and methods of communication when they are motivated to communicate a proximity (rather than distance) orientation. Thus, rather than modality/distance links only effecting communication when distance is static, dynamic aspects of distance have important implications for what modality people will use when

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[5] List of exact items provided in Supplemental material.

[6] Fisher r-to-z transformations were further used to compare the correlations to one another (rather than consider the significance of each individually). The correlation of felt closeness/visual preference and desired closeness/visual preference differed from each other ($z = -1.69$, $p = .046$, one-tailed per directional prediction; test performed using Lee and Preacher's (2013) online calculator). Other relevant comparisons did not show significant differences (for felt closeness/visual vs. signal closeness/visual, $z = -1.08$, one-tailed $p = .141$; for felt distance/visual vs. desired distance/visual, $z = 1.10$, one-tailed $p = .137$).

Table 1

Descriptive statistics and intercorrelations of variables.

	Variable	1	2	3	4	5	6	7
1.	Feel close	–	−0.66***	0.35***	−0.25*	0.34***	−0.26*	0.12
2.	Feel distant		–	−0.14	0.37***	−0.19	0.44***	−0.11
3.	Want closeness			–	−0.39***	0.72***	−0.21*	0.31**
4.	Want distance				–	−0.41***	0.64***	−0.23*
5.	Signal closeness					–	−0.32**	0.25*
6.	Signal distance						–	−0.02
7.	Emoji usage							–
M		4.74	3.43	5.05	2.75	5.39	2.56	0.921
SD		1.39	1.72	1.63	1.54	1.58	1.53	1.21

* $p < .05$.
** $p < .01$.
*** $p < .001$.

they communicate.

Open practices

The studies in this article earned Open Materials and Open Data badges for transparent practices. Materials, data, and pre-registration links for the studies are available at https://osf.io/75mau/.

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Appendix A. Supplementary material

Supplementary material to this article can be found online at https://doi.org/10.1016/j.jesp.2019.103849.

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