

Medium is a powerful message: Pictures signal less power than words

Elinor Amit^{a,*}, Shai Danziger^a, Pamela K. Smith^b

^a Coller School of Management, Tel Aviv University, Israel

^b Rady School of Management, University of California, San Diego, USA

ARTICLE INFO

Keywords:

Medium
Pictures
Words
Zoom
Emojis
Logos
Power
Psychological distance

ABSTRACT

This research shows people are perceived as less powerful when they use pictures versus words. This effect was found across picture types (company logos, emojis, and photographs) and use contexts (clothing prints, written messages, and Zoom profiles). Mediation analysis and a mediation-by-moderation design show this happens because picture-use signals a greater desire for social proximity (versus distance) than word-use, and a desire for social proximity is associated with lower power. Finally, we find that people strategically use words (pictures) when aiming to signal more (less) power. We refute alternative explanations including differences in the content of pictures and words, the medium's perceived appropriateness, the context's formality, and the target's age and gender. Our research shows pictures and words are not interchangeable means of representation. Rather, they signal distinct social values with reputational consequences.

1. Introduction

Imagine going to a Red Sox baseball game with work colleagues. You are a Red Sox fan and want to wear a shirt with the team's logo. You have two shirts: one with the team's verbal logo, and one with its visual logo (see Fig. 1). Which shirt would you wear? The choice between pictorial and verbal instantiations of the Red-Sox's logo is one of many medium¹ choices people make in daily life. People choose to use pictures versus words on shirts, coffee mugs, bathroom signs, and body tattoos; they decide whether to send a pictorial or verbal birthday card; include emojis in social media messages or not; choose a pictorial or verbal Zoom profile; post photographs from their last vacation or write about it; and elect whether to use digital platforms that rely more on pictorial representations (like Instagram) or more on verbal text (like Twitter).

The choice between using visual and verbal means of communication is intriguing. The transition from visual to linguistic communication is an important milestone in human history (Corballis, 2014; Suddendorf & Corballis, 2010). Yet in recent years there has been a resurgence in the use of pictures to communicate (Cramer, de Juan, & Tetreault, 2016; Tolins & Samermit, 2016). This rise in popularity may be linked to the interpersonal benefits of using pictures to communicate (e.g., Daniel & Camp, 2020; Derks, Fischer, & Bos, 2008; Kaye, Malone, & Wall, 2017; Riordan, 2017; but see findings about smiley faces; Glikson, Cheshin, &

Van Kleef, 2018).

In contrast to this body of work, in this paper we argue that using pictures to communicate carries a reputational consequence for a foundational force that governs relationships: one's perceived power (Emerson, 1962; Fiske, 1992; Van Kleef & Cheng, 2020). In particular, we show people are perceived as less powerful when they communicate using pictures versus words. An additional contribution of our research is elucidating the mechanism through which medium affects perceived power. We show that the effect of pictorial communication on perceived power happens because pictures signal a desire for social proximity, a motivation of low power individuals, whereas words signal a desire for social distance. Finally, we show communicators can strategically use pictures (vs. words) to dynamically shape their power relations with others.

Next, we discuss the importance of power in social relations and the crucial role of perceiving and signaling power. Then, we explain why and how the medium of representation, pictures versus words, signals different levels of social power. Finally, we present a series of experiments that support our hypotheses.

1.1. Power and signaling power

Power is a foundational force governing relationships both within

* Corresponding author.

E-mail addresses: elinoramit@tauex.tau.ac.il (E. Amit), shaid@tauex.tau.ac.il (S. Danziger), psmith@rady.ucsd.edu (P.K. Smith).

¹ We use the word "medium" to refer to representation format – pictures versus words. The term does not refer to the media channel or the platform where the representation appears.



Fig. 1. Stimuli for Experiment 1. Participants were shown either the shirt with the visual logo or the shirt with the verbal logo.

and outside of organizations (Emerson, 1962; Fiske, 1992; Van Kleef & Cheng, 2020). In line with recent literature, we define *power* as asymmetric control over valued resources, with those in higher power positions having more control over valued resources than those in lower positions (Emerson, 1962; Fiske, 2010; Keltner, Gruenfeld, & Anderson, 2003; Magee & Galinsky, 2008; Magee & Smith, 2013; Thibaut & Kelley, 1959). Consequently, lower-power people depend more on higher-power people than vice versa (Emerson, 1962; Fiske & Berdahl, 2007).

Because of the interpersonal nature of power (e.g., Keltner, Van Kleef, Chen, & Kraus, 2008; Smith & Magee, 2015), perceiving power signals and signaling power are crucial skills (e.g., Fiske, 1993; Tiedens & Fragale, 2003). Indeed, individuals can detect power differences quickly and recall them easily (Chiao et al., 2008; Zitek & Tiedens, 2012), and the recognition of social hierarchy is associated with distinct neural networks in both humans and nonhuman primates (Chiao, 2010; Koski, Xie, & Olson, 2015). Detecting a person's level of power allows perceivers to determine whether certain behaviors of that person are acceptable or need to be sanctioned, for example, whether they must follow social norms (e.g., Copeland, 1994; Magee & Galinsky, 2008). Furthermore, relationships and groups may suffer when individuals miss or misinterpret power cues. For instance, when group members disagree about each other's level of power, the group experiences more conflict than when there is consensus about power, and this conflict hurts group performance (Greer, Caruso, & Jehn, 2011).

On the flip side, individuals can use power signals to strategically manipulate their perceived power. For example, height is associated with power: taller people tend to earn more money, have more powerful jobs, and win more presidential elections (Judge & Cable, 2004). As a result, individuals can increase their perceived power by manipulating their apparent height, for example, by adjusting the lines on an organizational chart to increase their "height" over others (Giessner & Schubert, 2007). Importantly, being perceived as powerful elicits treatment from others that allows one to actually achieve such power (Ridgeway, Berger, & Smith, 1985; Smith & Galinsky, 2010). For instance, being proactive and assertive—behaviors associated with the powerful (e.g., Ames & Flynn, 2007; Galinsky, Gruenfeld, & Magee, 2003)—lead people to be seen as more powerful (Magee, 2009) and to gain a higher rank in a group (Anderson, Brion, Moore, & Kennedy, 2012; Kilduff & Galinsky, 2013). Individuals who speak like the powerful, for example, by using more abstract language (e.g., Smith, Smallman, & Rucker, 2016; Smith & Trope, 2006; Magee, Milliken, & Lurie, 2010) or by using a lower voice pitch (Hall, Coats, & LeBeau, 2005), are not only seen as more powerful (Puts, Hodges, Cardenas, &

Gaulin, 2007; Wakslak, Smith, & Han, 2014), but are also treated as authorities: their advice is more likely to be taken (Reyt, Wiesenfeld, & Trope, 2016), their ventures are more likely to be invested in (Huang, Joshi, Wakslak, & Wu, 2021), and they are paid more (Mayew, Parsons, & Venkatachalam, 2013).

1.2. Medium as a power signal

Pictures and words are two fundamentally different types of representational formats that are processed by different information-processing systems in the brain: the visual system and the language system (Amit, Hoeflin, Hamzah, & Fedorenko, 2017; Damasio & Damasio, 1992; Gazzaniga, 2009; Kanwisher, McDermott, & Chun, 1997; Sereno et al., 1995). An important difference between pictures and words is their level of abstraction. Pictures in nearly all cases² physically resemble their referent objects; they are analogies of the real world (Peirce, 1902). By contrast, words are not visual signs of objects, but rather visual signs of the (oral) names of the objects (Coulmas, 2003). As such, words in nearly all cases³ are abstract representations that have an arbitrary relationship with their corresponding objects. Words carry the essence of objects, abstracting the stimulus into its basic, invariant properties and omitting incidental details (Amit et al., 2019; Amit et al., 2019; Glaser, 1992; Paivio, 1991; Pinker, 2003; Rim et al., 2015).

The emergence of language and the shift from pictorial to verbal communication was a major development in human phylogeny and ontogeny. Indeed, language is the dominant means of communication among human adults (Corballis, 2014; Pinker, 2003; Suddendorf & Corballis, 2010; Torrez, Wakslak, & Amit, 2019). Yet, despite the dominance of language in communication, an unprecedented variety of pictorial representations are used today to supplement and even replace verbal representations, making the choice between pictures and words a constant requirement. Research offers several explanations why picture use has become popular in communication. It was argued that pictures can reduce the ambiguity of message meaning (Kaye et al., 2017), and enhance processing fluency (Daniel & Camp, 2020). Pictures also elicit stronger emotional reactions than words (Holmes, Mathews, Mackintosh, & Dalgleish, 2008; Kensinger & Schacter, 2006), communicate positive affect and clarify irony (Derks et al., 2008; Riordan, 2017), convey affective information to potential partners (Derks et al., 2008;

² Exceptions include abstract art.

³ Exceptions include onomatopoeia.

Gesselman, Ta, & Garcia, 2019), and add expression through establishing an emotional tone that may be lost in the absence of face-to-face interaction (Kaye et al., 2017).

In contrast to this body of work, here we argue that using pictorial representations may carry reputational consequences for a foundational force governing relationships: one's perceived power (Emerson, 1962; Fiske, 1992; Van Kleef & Cheng, 2020). We show people are perceived as less powerful when they communicate using pictures versus words. The rationale for this hypothesis builds on two previously unrelated bodies of work. First, research shows that visual and verbal representations serve distinct cognitive and social functions. According to the *Functional Theory of Mental Representation* (Amit et al., 2019; Amit, Algom, & Trope, 2009; Amit, Algom, Trope, & Liberman, 2008), people associate and use visual representations to represent objects and events that are close to them—temporally, geographically, or socially. In contrast, people associate and use verbal representations to represent objects and events that are far from them—temporally, geographically, or socially. The robust association between medium and psychological distance affects cognitive processing (Amit et al., 2009, 2019), interpersonal communication (Amit, Waksal, & Trope, 2013), self-control behavior (Carnevale, Fujita, Han, & Amit, 2015), and moral judgment (Amit & Greene, 2012). More recently, it was shown that in addition to using compatible medium/distance combinations (i.e., pictures to represent proximal targets and words to represent distal targets), people create medium/distance *incompatible* combinations to dynamically change their distance from others, based on their needs and desires. More specifically, people use pictures to signal a desire to get closer to others, and words to signal a desire to increase distance from others (Torrez et al., 2019).

Critically, according to the *Social Distance Theory of Power* (Magee & Smith, 2013), the desire to get closer to or more distant from others changes as a function of one's power. Low-power individuals desire to get closer to high-power individuals who can influence their outcomes. In contrast, high power-individuals do not desire to get closer to low-power individuals, since they depend less on low-power individuals to achieve their goals (Lee & Tiedens, 2001; Magee & Smith, 2013; Magee, 2020). Although much literature suggests power affects social distance motivation (Case, Conlon, & Maner, 2015; Foulk et al., 2020; Lammers, Galinsky, Gordijn, & Otten, 2012; Smith & Hofmann, 2016; Waytz, Chou, Magee, & Galinsky, 2015), we are not aware of research that has examined whether people use “reverse engineering” to infer another person's power from their social distance motivation, and if so, what cues they use to make this inference. In this paper, we fill this gap in the literature by proposing people infer another person's social distance motivation, and consequently power, from that person's use of medium. Formally, we predict that:

H1: People perceive a person who uses pictures as less powerful than a person who uses words.

H2: Social distance motivation mediates the effect of medium on perceived power. Pictures signal less power because they indicate the target person desires proximity, while words signal more power because they indicate the target person desires distance.

H3: Communicators strategically use medium to signal power. A person is less likely to use pictures (vs. words) when wanting to appear more powerful.

1.3. What's in a picture? Differences and similarities between visual representations

As discussed earlier, an important difference between pictures and words regards their level of abstraction. Pictures are concrete representations that usually physically resemble their referent objects (Peirce, 1902). By contrast, words are usually abstract representations that have an arbitrary relationship with their corresponding objects. Words can differ in their level of abstraction, from abstract (e.g., “fruit,” “love”) to

concrete (e.g., “pink lady”) (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976). Pictures can also differ in their level of abstraction. An impoverished outline drawing of an object is less detailed than a colored photograph of that object. For example, a photograph of a chair usually includes its color whereas an outline drawing does not.

In the current paper we focused on words represented in the basic level of abstraction (e.g., car, chair, apple), which provides the most natural level of information expected in communication (Rosch et al., 1976). However, given the diversity in types of pictures, it is an intriguing empirical question whether pictures at different levels of abstraction have similar effects on power inferences. Research showing that rich and impoverished pictorial representation are similarly associated with proximal targets (more than words), suggests similar effects (Amit et al., 2019; Amit et al., 2009; Amit et al., 2013; Glaser, 1992; Rim et al., 2015). To test the robustness of our hypothesis, we used several types of pictures: minimalist visual representations, such as impoverished two-tone outline drawings; richer, colorful pictures, such as emojis; and photographs of objects.

1.4. Testing alternative explanations

We argue that inferences about one's desire for proximity/distance mediates the effect of medium on power. Yet prior research suggests several alternative explanations, including perceived warmth, competence, judgmentalness and appropriateness. First, research shows that pictures elicit stronger emotional responses than words (e.g., Amit & Greene, 2012; Holmes et al., 2008; Kensinger & Schacter, 2006; Mathews, Ridgeway, & Holmes, 2013). Because pictures elicit stronger emotions than words, a person may be perceived as warmer (Fiske, Cuddy, Glick, & Xu, 2002), when they use pictures than when they use words. On the other hand, abstract language can increase likability (Douglas & Sutton, 2010), and because words are more abstract than pictures (Amit et al., 2009; 2019; Rim et al., 2015), a target may be judged more positively on a variety of traits, including perceived warmth, when they use words than when they use pictures. To test whether warmth perceptions underlie the effect of medium on perceived power we measured perceived warmth in Experiments 1–2.

Second, people who describe actions more concretely tend to be less proficient at a variety of skilled actions than those who use more abstract descriptions (Vallacher & Wegner, 1989). Similarly, Glikson et al. (2018) found that in formal settings, senders are perceived as less competent when they use concrete, visual representations of smiley faces (☺), implying the effect of medium on perceived power could be related to the target person being judged as less competent because they use pictures to communicate. To test whether competence perceptions influence the effect of medium on perceived power we also measured perceived competence in Experiments 1–2.

Third, we explored the role of appropriateness in mediating the effect of medium on perceived power. Previous research shows that going against the norm signals power (e.g., Bellezza, Gino, & Keinan, 2014; Van Kleef, Homan, Finkenauer, Gündemir, & Stamkou, 2011; Stamkou, Homan, & Van Kleef, 2020). Because people perceive emoji and emoticon use as less appropriate in formal settings (Glikson et al., 2018; Riordan & Glikson, 2020), using these types of representations in such settings, may increase and not decrease one's perceived power.

We did several things to understand the potential effect of a medium's perceived appropriateness on perceived power. First, we examined the effect of medium on perceived power in informal (Experiment 1) and semi-formal (Experiments 4 and 5) settings, where appropriateness considerations should be less relevant. Taking a more direct approach, in Experiment 4 we measured the perceived appropriateness of using each type of medium.

Finally, because powerful people tend to feel more entitled to judge others than do powerless people (Goodwin, Gubin, Fiske, & Yzerbyt, 2000), and are even expected to do so (e.g., Foucault, 1980), we measured judgmentalness in Experiments 1–2 (Waksal et al., 2014).

2. Overview of studies

We conducted seven experiments to test our hypotheses (Table 1). Experiments 1 and 2 show the basic effect, that pictures signal less power than words. Experiment 1 shows the effect in an informal environment (viewing a target shopper at the grocery store), and Experiment 2 generalizes the effect to a work-related email communication. The findings of both experiments refute the alternative accounts whereby medium affects power through warmth, competence, or judgmentalness. Experiment 3 demonstrates the robustness of the effect by showing an effect of visual representations in the presence of a competing high-power signal: abstract language. The next two experiments demonstrate that perceived distance motivations underlie the effect using a mediation analysis (Experiment 4) and a mediation-by-moderation design (Experiment 5). Experiment 6 goes beyond power inferences, showing an effect of medium on a consequential behavioral choice, within a rich interactive context. Finally, Experiment 7 shows people can strategically use medium to signal power (see also Kronrod & Danziger, 2013).

We aimed for sufficiently large samples to have 80% power to detect a small to medium effect size. We report sensitivity analyses for every study using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). In each study, participants provided informed consent at the start and completed a demographic questionnaire at the end. Data is available at <https://osf.io/uf6wv>.

3. Experiment 1: Clothing with a visual (vs. verbal) logo signals less power

Clothing serves a communication purpose (Bellezza et al., 2014; Piacentini & Mailer, 2004; Rosenfeld & Plax, 1977). In Experiment 1 we asked participants to imagine viewing another shopper at the grocery store while shopping. One group of participants was asked to imagine the shopper wearing a shirt with a verbal logo on it. A second group was asked to imagine the shopper wearing a shirt with a visual logo on it. Following H1, we predicted participants would perceive the target person as more powerful when they wore a shirt with the verbal logo.

3.1. Method

Participants. Two hundred participants (105 females, 95 males; $M_{\text{age}} = 39.28$, $SD = 12.56$), completed the survey on Amazon Mechanical Turk (MTurk) for pay. With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $f = 0.20$, or a small-to-medium-sized effect.

Procedure. Participants were randomly assigned to the verbal or visual condition, in a between-subjects design. All participants read the following sentence: "Imagine standing in line at the supermarket. The person standing in front of you wears the following T-shirt." In the visual condition, participants saw a picture of a shirt with the visual logo of the Red Sox baseball team. In the verbal condition, participants saw a picture of a shirt with the verbal logo "RED SOX" (Fig. 1). Then, participants were asked to rate that person on the following items using 7-point scales (1 = *not at all*, 7 = *very much*): perceived power (dominant, powerful, in control, $\alpha = 0.83$), warmth (friendly, trustworthy, likeable, $\alpha = 0.82$), competence (knowledgeable, competent, intelligent, $\alpha = 0.80$), and judgmentalness (judgmental, critical, opinionated, $\alpha = 0.77$). The order of items was randomized. Finally, we asked participants for their familiarity with the logo on the shirt (yes, no) (see Fig. 2).

3.2. Results and discussion

We conducted a multivariate analysis of variance (MANOVA) with medium as the independent variable, and power, warmth, competence, and judgmentalness as dependent variables. Consistent with our prediction, participants in the verbal logo condition ($M = 4.20$, $SD = 0.98$), rated the target person as more powerful than in the visual logo condition ($M = 3.89$, $SD = 1.26$), $F(1, 198) = 5.32$, $p = .022$, $\eta_p^2 = 0.026$. In addition, participants in the verbal logo condition rated the target person as more judgmental than those in the visual logo condition ($M_{\text{word}} = 4.43$, $SD_{\text{word}} = 1.08$ vs. $M_{\text{picture}} = 4.04$, $SD_{\text{picture}} = 1.31$), $F(1, 198) = 5.27$, $p = .023$, $\eta_p^2 = 0.026$. Logo medium did not affect warmth ($M_{\text{word}} = 4.53$, $SD_{\text{word}} = 1.01$ vs. $M_{\text{picture}} = 4.46$, $SD_{\text{picture}} = 1.10$), $F(1, 198) = 0.21$, $p = .64$, $\eta_p^2 = 0.001$, or competence ($M_{\text{word}} = 4.42$, $SD_{\text{word}} = 0.96$ vs. $M_{\text{picture}} = 4.24$, $SD_{\text{picture}} = 1.17$), $F(1, 198) = 1.35$, $p = .24$, $\eta_p^2 = 0.007$.

Table 1
Summary of Studies.

Purpose	Design	Sample size	Measures	Key findings
Study 1: Test H1 with brand logos	One factor, between-subjects	200 U.S. participants	Power, competence, warmth, & judgmentalness	Medium affected perceived power & judgmentalness.
Study 2 Test H1 in a workplace context	One factor, between-subjects	201 U.S. participants	Power, competence, warmth, judgmentalness, & perceived age	Medium affected perceived power
Study 3 Test H1 with conflicting power cues	One factor, between-subjects	195 U.S. participants	Power & suitability for managerial job	Medium affected perceived power & suitability
Study 4A Test H2: Mediating effect of desire for proximity	Between-subjects	290 U.S. participants	Power & desire for social proximity	Desire for social proximity mediates the effect of medium on perceived power
Study 4B Test H2: Mediating effect of desire for proximity	Between-subjects	290 U.S. participants	Power & desire for social proximity	Desire for social proximity mediates the effect of medium on perceived power
Study 5 Test H2 using mediation-by-moderation design	Two factors, between-subjects	357 U.S. participants	Power	Medium affected perceived power only in no-distance information condition
Study 6 Test H1 with zoom profile	within-subjects	197 U.S. participants	person choice	Medium affected person choice
Study 7A Test H3 with brand logo	Between-subjects	199 U.S. participants	Medium choice	Power affected medium choice
Study 7B Test H3 with brand logo	Between-subjects	199 U.S. participants	Medium choice	Power affected medium choice

To check whether the effect of the logo's medium on perceived power was related to familiarity with the Red Sox sports team, we ran an ANOVA, with medium as the independent variable, perceived power as the DV, and familiarity with the Red Sox team as a covariate. This analysis yielded similar results to those reported above. Participants in the verbal logo condition ($M = 4.20$, $SD = 0.98$) rated the target person as more powerful than those in the visual logo condition ($M = 3.89$, $SD = 1.27$), $F(1, 197) = 5.17$, $p = .024$, $\eta_p^2 = 0.026$.

4. Experiment 2: Using emojis in a written message signals less power

Experiment 2 tested the hypothesis that medium affects perceived power by examining the use of emojis, another form of visual representation, in a workplace context. Research shows extensive use of emojis in instant messaging (Derks, Bos, & Von Grumbkow, 2008; Garrison, Remley, Thomas, & Wierszewski, 2011), with 92% of messaging-platform users sending them, and a staggering five billion online pictorial signs sent every day on Facebook Messenger alone (Cramer et al., 2016; Tolins & Samermit, 2016). Notably, the popularity of using pictorial representations such as emoticons (Glikson et al., 2018; Skovholt, Grønning, & Kankaanranta, 2014), and emojis (Riordan & Glikson, 2020), extends to professional settings as well.

In Experiment 2 we tested the hypothesis that using emojis in a work-related context affects communicator's perceived power. Participants were shown a workplace invitation for a "beginning of the year party." In the words-only condition, participants were shown a verbal invitation. In the words + pictures condition, participants were shown a similar invitation with emojis replacing two object words with the same meaning. We predicted participants would perceive the sender as more powerful when their invitation contained only words than when it also contained pictures.

4.1. Method

Participants. Two hundred one participants (108 females, 92 males, 1 did not report gender; $M_{age} = 36.26$, $SD = 11.63$), completed the survey for payment on Amazon Mechanical Turk (MTurk). With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $f = 0.20$, or a small-to-medium-sized effect.

Procedure. Participants were randomly assigned to either the words-only or words-and-pictures condition, in a between-subjects design. All participants read the following sentence: "Imagine you work at a large company. You received an invitation to the company's beginning of the year party. The email was written by Tom, who works in Human Resources at your company. You have never met him personally." Next came the experimental manipulation. The words-only participants were shown an invitation that read, "There will be a beginning of the year toast on Tuesday! Shrimp and champagne will be served. Please RSVP if you are coming." For the words-and-pictures participants, the words "shrimp" and "champagne" were replaced with emojis depicting shrimp and champagne (Fig. 3). As in Experiments 1 and 2, participants then rated Tom using 7-point scales (1 = *not at all*, 7 = *very much*) on perceived power (dominant, powerful, in control, $\alpha = 0.85$), warmth (friendly, trustworthy, likeable, $\alpha = 0.82$), competence (knowledgeable, competent, intelligent, $\alpha = 0.91$), and judgmentalness (judgmental, critical, opinionated, $\alpha = 0.84$). The order of items was randomized across participants. Next, participants completed several irrelevant filler questions (e.g., "What wing of the building do you think Tom's department is in?" with multiple choice options of North, South, East, West).

Several studies suggest that younger people use emoticons more than

older people (Oleszkiewicz et al., 2017), and that senders who use emojis appear childish (Provine, Spencer, & Mandell, 2007). Therefore, senders who use pictures may appear less powerful because they appear younger or childish. To examine this possibility, we asked participants to guess Tom's age.

4.2. Results and discussion

We conducted a MANOVA with medium as the independent variable, power, warmth, competence, and judgmentalness as dependent variables, and Tom's age as covariate. Participants in the words-only condition ($M = 4.34$, $SD = 1.37$), rated Tom as more powerful than those in the words-and-pictures condition ($M = 3.96$, $SD = 1.31$), $F(1, 200) = 4.44$, $p = .036$, $\eta_p^2 = 0.022$. Medium did not affect warmth ($M_{word} = 5.18$, $SD_{word} = 1.14$ vs. $M_{picture} = 5.19$, $SD_{picture} = 1.05$), $F(1, 200) = 0.003$, $p = .95$, $\eta_p^2 = 0.0001$, competence ($M_{word} = 4.88$, $SD_{word} = 1.32$ vs. $M_{picture} = 4.74$, $SD_{picture} = 1.15$), $F(1, 200) = 0.69$, $p = .405$, $\eta_p^2 = 0.003$, or judgmentalness ($M_{word} = 3.36$, $SD_{word} = 1.45$ vs. $M_{picture} = 3.22$, $SD_{picture} = 1.33$), $F(1, 200) = 0.49$, $p = .48$, $\eta_p^2 = 0.002$. Finally, medium did not affect Tom's perceived age ($M_{word} = 34.15$, $SD_{word} = 6.70$ vs. $M_{picture} = 34.08$, $SD_{picture} = 8.35$), $F(1, 201) = 0.004$, $p = .94$, $\eta_p^2 = 0.0001$.

In summary, Experiment 2's findings converge with those of Experiment 1, showing that participants perceived an employee who communicated using pictures as less powerful than an employee who communicated using only words. Medium did not affect perceptions of warmth, competence, judgmentalness, or the senders perceived age. Additionally, in both experiments the two medium conditions provided identical content (e.g., pictures of shrimp and champagne vs. the words "shrimp" and "champagne"), ruling out a difference in content as an alternative explanation for our effects.

5. Experiment 3: Using pictures weakens the power signal of abstract text

Experiment 3 had two aims: 1) testing our main hypothesis using an incentive-compatible paradigm, in which participants are rewarded for accurate responding, and 2) testing the effect of medium on perceived power in a more challenging setting of a competing power signal. Research has shown that abstract (vs. concrete) language signals high power (Palmeira, 2015; Waksak et al., 2014). Therefore, a message combining abstract language with a picture contains competing power signals, with the abstract language signaling high power, and the picture signaling low power. In Experiment 3 we tested how sending such a message affects a communicator's perceived power.

Similar to past research (Palmeira, 2015; Waksak et al., 2014), we asked participants to draw inferences about two people, Respondents X and Y, based on how they described target pictures. X always wrote concrete descriptions, and Y always wrote abstract descriptions. For the words-only condition, Y wrote descriptions using only words. For the words-and-pictures condition, Y replaced one word in each description with an emoji (Fig. 3). We told participants we had previously determined X's and Y's suitability for a management job that requires power. We asked participants to predict those suitability judgments, and informed them we would reward accurate predictions with a bonus payment. Consistent with Palmeira (2015), and Waksak et al. (2014), we hypothesized participants would use the level of linguistic abstraction as the primary cue for power and therefore would predict we judged Respondent Y, who used abstract language, as more suitable for the power-requiring job than Respondent X, who used concrete language. The critical question regarded how replacing some words with emojis would modify this effect. If the level of language abstraction overrides

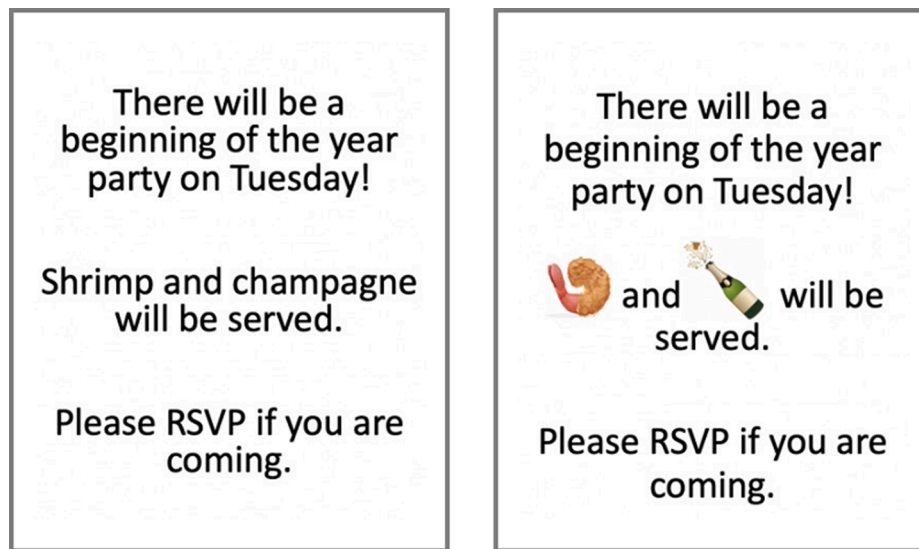


Fig. 2. Stimuli used in Experiment 2. Participants were shown either the words-only invitation or the words-and-pictures invitation.

the effect of medium as a power cue, then Y's predicted suitability judgments in the words-only and words-and-picture conditions should be similar. However, if the inclusion of pictures influences perceptions even in the presence of a competing power cue, the difference in suitability ratings between Respondent Y and Respondent X should be smaller when Y used pictures. We did not have a particular prediction regarding the effect of Respondent Y using a picture on the perceived suitability of Respondent X.

5.1. Method

Participants. One hundred ninety-five MTurk workers participated in the experiment. This experiment included a planned attention-check question (see below). Following Meyvis and Van Osselaer (2018), we excluded seven participants based on the attention-check, resulting in a final sample of 188 participants (82 females, 106 males; $M_{\text{age}} = 40.07$, $SD = 13.40$). With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $f = 0.10$, or a small effect, for the critical interaction.

Materials and procedure. Participants were randomly assigned to either the words-only or words-and-pictures condition, in a between-subjects design. Participants were informed that in a previous survey, we gave two respondents (X and Y) several tasks to determine their suitability for a management job requiring someone who is dominant, in control, and powerful. They were then told their task was to predict our suitability rankings based on the responses of X and Y in one of those tasks. We further informed participants they would receive 10 cents (up to 20 cents total) for each correct guess, that would be paid in addition to the 30 cents they received for completing the study. As an attention check, immediately after informing participants about the bonus, we asked them to indicate how much money they would receive as a bonus by choosing one out of five options. We excluded from further analysis the seven participants who chose an incorrect amount. We then presented participants with the responses of X and Y in a "picture description task." The responses were based on Vallacher and Wegner (1989) Behavior Identification Form (BIF). In particular, we told participants that X and Y were asked to write a description of pictures (Fig. 3). Respondent X's responses used relatively concrete language and were constant across conditions. By contrast, Respondent Y's responses used relatively abstract language. For the words-only participants, Y's response contained only words, whereas for of the words-and-pictures participants an object emoji replaced a word with the same meaning. Next, in two questions, participants predicted our ratings of Y and X's

suitability for the management job on 5-point scales ($-2 = \text{not suitable at all}$, $+2 = \text{very suitable}$), and then rated X and Y separately on their perceived power, using three items presented in random order (dominant, powerful, and in control; $\alpha_Y = 0.96$, $\alpha_X = 0.96$).

5.2. Results and discussion

The results are shown in Figs. 4A and 4B. To test the effect of medium on participants' power perceptions of Respondents X and Y, we conducted a mixed-model ANOVA with medium (words vs. words-and-picture) as a between-subject variable and participants' power ratings of Respondents X and Y as a within-subject variable. Participants rated Respondent Y ($M = 5.13$, $SD = 1.63$) as more powerful than Respondent X ($M = 3.86$, $SD = 1.62$), $F(1, 186) = 35.27$, $p < .0001$, $\eta_p^2 = 0.15$. Critically, this main effect was qualified by a significant respondent rating \times medium interaction, $F(1, 186) = 6.89$, $p = .009$, $\eta_p^2 = 0.036$. As predicted, simple-effects analysis revealed the difference in participants' predictions about Respondents X and Y's perceived power was larger in the words-only condition ($M_Y = 5.43$, $SD_Y = 1.54$ and $M_X = 3.59$, $SD_X = 1.59$), $p < .0001$, than in the words-and-picture condition ($M_Y = 4.84$, $SD_Y = 1.67$ and $M_X = 4.13$, $SD_X = 1.62$), $p = .011$.

We then conducted a mixed-model ANOVA with medium (words-only vs. words-and-picture) as a between-subject variable and participants' prediction ratings of Respondents X and Y's suitability for the high-power job as a within-subject variable. Participants predicted we had rated Respondent Y as more suitable for the high-power management job ($M = 0.93$, $SD = 1.26$), than Respondent X ($M = -0.05$, $SD = 1.33$), $F(1, 186) = 33.05$, $p < .0001$, $\eta_p^2 = 0.15$. Critically, this main effect was qualified by a significant respondent rating \times medium interaction, $F(1, 186) = 4.51$, $p = .035$, $\eta_p^2 = 0.024$. As predicted, simple-effects analysis revealed the difference in participants' predictions about our rating of Respondents Y and X as suitable for the high-power job was larger in the words-only condition ($M_Y = 1.14$, $SD_Y = 1.14$ and $M_X = -0.202$, $SD_X = 1.32$), $p < .0001$, than in the words-and-picture condition

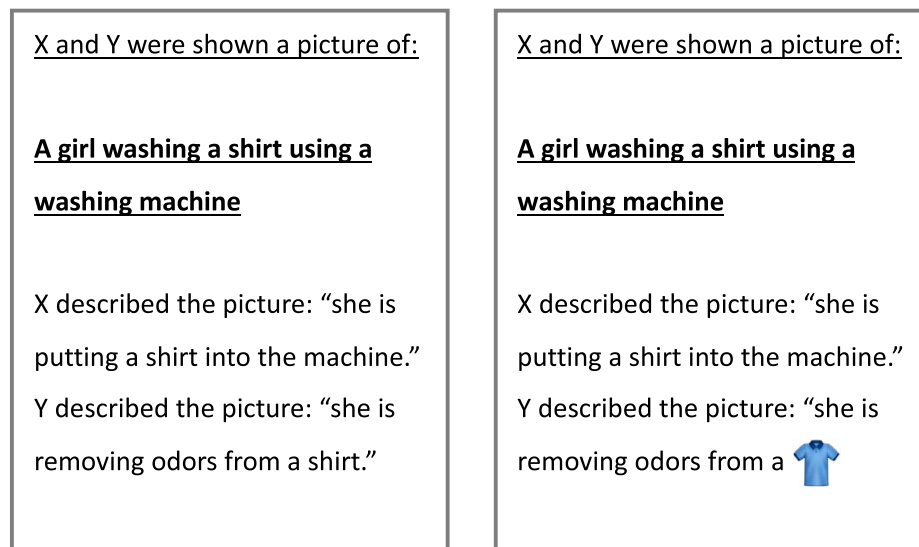


Fig. 3. An example of the two versions of a stimulus in Experiment 3. In the words-only condition, participants saw the version on the left, in which Respondent Y wrote abstract descriptions consisting of only words. In the words-and-pictures condition, participants saw the version on the right, in which an object emoji replaced a word with the same meaning (shirt in the depicted example).

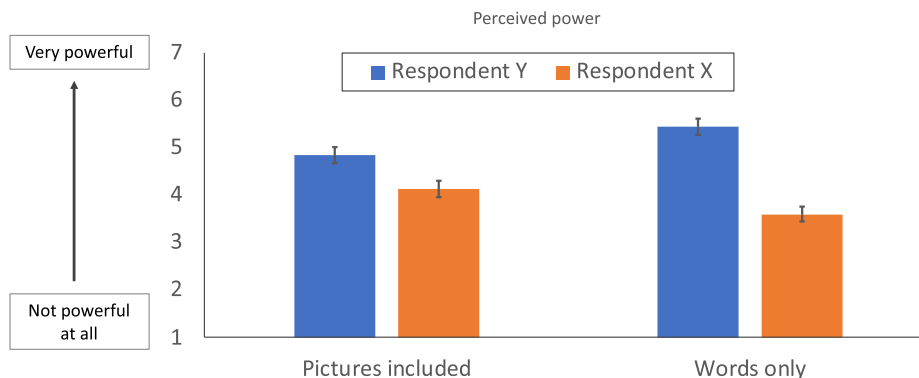


Fig. 4A. Perceived power ratings for Respondent X and Respondent Y as a function of whether Respondent Y's written description included pictures.

($M_Y = 0.71$, $SD_Y = 1.37$ and $M_X = 0.096$, $SD_X = 1.34$), $p = .011^4$.

In summary, the results of Experiment 3 show that using pictures to communicate weakens the perceived power of a communicator who uses abstract language. More broadly, they show pictures signal low power even in the presence of a competing power signal. Experiment 3

also provides incentive-compatible evidence that the use of pictures signals lower power.

6. Experiment 4: Perceived social distance motivation mediates the effect of medium on perceived power

Experiment 4 had two aims. Our first aim was to test the hypothesis that a target person's perceived motivation for social proximity (vs. social distance) mediates the effect of medium on perceived power. We asked participants to imagine attending a company retreat, in which employees were asked to choose a shirt with the company's logo on it. One shirt had a verbal logo and the other a visual logo. Participants learned that an employee chose either the shirt with the verbal logo or the shirt with the visual logo. Participants were then asked to evaluate this employee's power, and her desire for social proximity (vs. social distance). We hypothesized participants would perceive the employee that chose the visual logo as less powerful than the employee that chose the verbal logo, and that this effect would be mediated by the employee's perceived desire for social proximity (vs. social distance).

A second aim was to more directly explore the role of appropriateness in mediating the effect of medium on perceived power by measuring the perceived appropriateness of the representational format.

Finally, for generalizability, we ran two versions of the same experiment, with two different objects (Experiment 4A: lotus; and

⁴ An analysis including the seven participants who failed the attention check yielded similar findings. For perceived power participants rated Respondent Y ($M = 5.18$, $SD = 1.18$) as more powerful than Respondent X ($M = 3.80$, $SD = 1.63$), $F(1, 193) = 42.76$, $p < .0001$, $\eta_p^2 = 0.18$. There was a significant interaction between respondent rating and medium, $F(1, 193) = 6.47$, $p = .012$, $\eta_p^2 = 0.032$. Simple-effects analysis revealed that the difference in the participant's predictions about Respondents X and Y's perceived power was larger in the words-only condition ($M_Y = 5.47$, $SD = 1.53$ and $M_X = 3.56$, $SD = 1.59$), $p < .0001$, than in the words-and-picture condition ($M_Y = 4.89$, $SD = 1.66$ and $M_X = 4.05$, $SD = 1.63$), $p = .005$. For job assignment, participants predicted we had rated Respondent Y ($M = 0.95$, $SD = 1.25$) as more suitable for the high-power management job than Respondent X ($M = -0.07$, $SD = 1.34$), $F(1, 193) = 37.92$, $p < .0001$, $\eta_p^2 = 0.16$. The interaction between respondent rating and medium was marginally significant, $F(1, 193) = 3.391$, $p = .067$, $\eta_p^2 = 0.017$. Simple-effects analysis revealed that the difference in the participant's predictions about Respondents Y and X as suitable for the high-power job was larger in the words-only condition ($M_Y = 1.14$, $SD = 1.13$ and $M_X = -0.19$, $SD = 1.34$), $p < .0001$, than in the words-and-picture condition ($M_Y = 0.76$, $SD = 1.34$ and $M_X = 0.04$, $SD = 1.34$), $p = .003$.

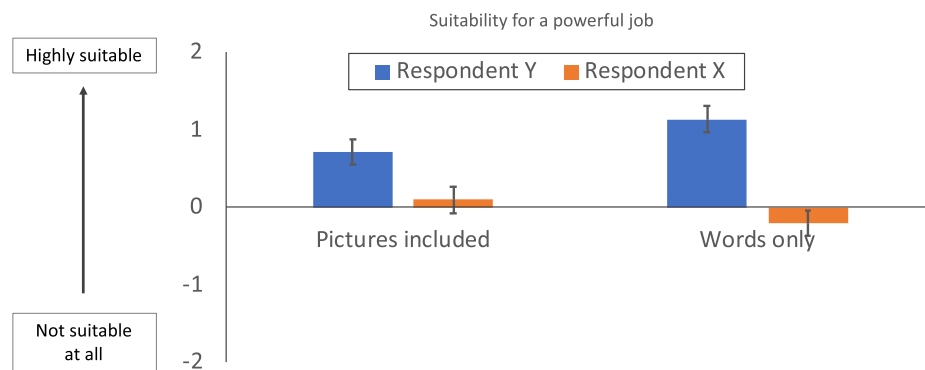


Fig. 4B. Suitability for a managerial (powerful) job for Respondent X and Respondent Y as a function of whether Respondent Y's written description included pictures.

Experiment 4B: goldfinch).

7. Experiment 4A: Lotus

7.1. Method

Participants. Two hundred and ninety MTurk workers (143 females, 145 males; 2 participants reported "other" for gender; $M_{age} = 39.9$, $SD = 12.87$) participated for pay in the experiment. With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $f = 0.17$, or a small-to-medium-sized effect.

Procedure. Participants were randomly assigned to either the verbal or visual condition, in a between-subjects design. Participants were informed the survey concerned person perception and then they read the following instructions: "Imagine you work in a large company named Lotus. At the beginning of the year, the company held a retreat for its employees. For the retreat, the Human Resource Manager prepared t-shirts with the company logo on them."

Next, they were informed there were two types of shirts: one with a visual logo and one with a verbal logo (Fig. 5). Participants in the visual condition were told that Emily, an employee they are not familiar with, chose the visual logo shirt. Participants in the verbal condition were told Emily chose the verbal logo shirt. The order of the two shirts on the screen (whether the visual shirt appeared to the left and verbal to the right or vice versa) was randomized across participants. Subsequently, using 8-point semantic differential scales, participants evaluated Emily's perceived power (two items: not at all dominant/very dominant; not at all powerful/very powerful, $\alpha = 0.85$) and desire for social proximity. Desire for social proximity was measured using three items: wants to get closer to other employees/wants to maintain distance from other employees; and wants to be a friend of other employees/does not want to be a friend of other employees. Based on Stephan, Liberman, and Trope (2010), who described formality as defining and creating social distance, we also included a measure of formality (wants to establish informal relationship with other employees/wants to maintain formal relationship with other employees). Together, these three items were reliable, $\alpha = .83^5$. Next, participants evaluated the appropriateness of Emily's shirt choice, using three 7-point Likert scale items presented in random order (how unusual was Emily shirt's choice; how appropriate

was Emily's shirt choice; and how silly was Emily's shirt choice). Together, these three items were reliable, $\alpha = 0.80$.

7.2. Results

We conducted a MANOVA with medium as the independent variable, and power, distance, and appropriateness as dependent variables. Emily was rated as more powerful in the verbal condition ($M = 4.98$, $SD = 1.28$), than in the visual condition ($M = 4.07$, $SD = 1.28$), $F(1, 289) = 36.38$, $p < .00001$, $\eta_p^2 = 0.11$. In addition, she was rated as desiring more social distance in the verbal condition ($M = 4.63$, $SD = 1.42$), than in the visual condition ($M = 3.68$, $SD = 1.41$), $F(1, 289) = 32.73$, $p < .00001$, $\eta_p^2 = 0.10$. Finally, Emily's choice of shirt was rated as less appropriate in the verbal condition ($M = 5.62$, $SD = 1.28$), than in the visual condition ($M = 6.11$, $SD = 1.14$), $F(1, 289) = 11.7$, $p < .001$, $\eta_p^2 = 0.04$.

Next, we conducted a mediation analysis with motivation for social proximity and perceived appropriateness as potential mediators (PROCESS model 4, Hayes, 2017). Consistent with our predictions, there was a significant indirect effect of medium on perceived power through perceived motivation for social proximity ($b = 0.39$, $SE = 0.092$; 95% CI = [0.221, 0.584]). Perceived appropriateness did not mediate the effect of medium on perceived power ($b = -0.03$, $SE = 0.026$; 95% CI = [-0.09, 0.011]).

8. Experiment 4B: Goldfinch

Experiment 4B aimed to replicate the results of Experiment 4A using a different logo.

8.1. Method

Participants. Two hundred and ninety MTurk workers (149 females, 140 males, 1 participant reported "other" for gender; $M_{age} = 40.1$, $SD = 11.95$) participated for pay in the experiment. With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $f = 0.17$, or a small-to-medium-sized effect.

Procedure. The design and procedure were identical to that of Experiment 4A. We replaced the Lotus stimuli with the Goldfinch stimuli (Fig. 6). We used the same measures for power ($\alpha = 0.85$), social

⁵ Dropping formality from the desired distance measure reduced the measure's reliability to $\alpha = 0.71$, but did not affect the effect of power on medium and the mediation through distance. Emily was rated as desiring more social distance in the verbal condition ($M = 4.75$, $SD = 1.48$) than in the visual condition ($M = 3.79$, $SD = 1.43$), $F(1, 288) = 30.93$, $p < .00001$, $\eta_p^2 = 0.097$. There was a significant indirect effect of medium on perceived power through perceived motivation for social proximity ($b = 0.39$, $SE = 0.089$; 95% CI = [0.23, 0.58]). Perceived appropriateness did not mediate the effect of medium on perceived power ($b = -0.01$, $SE = 0.03$; 95% CI = [-0.07, 0.04]).

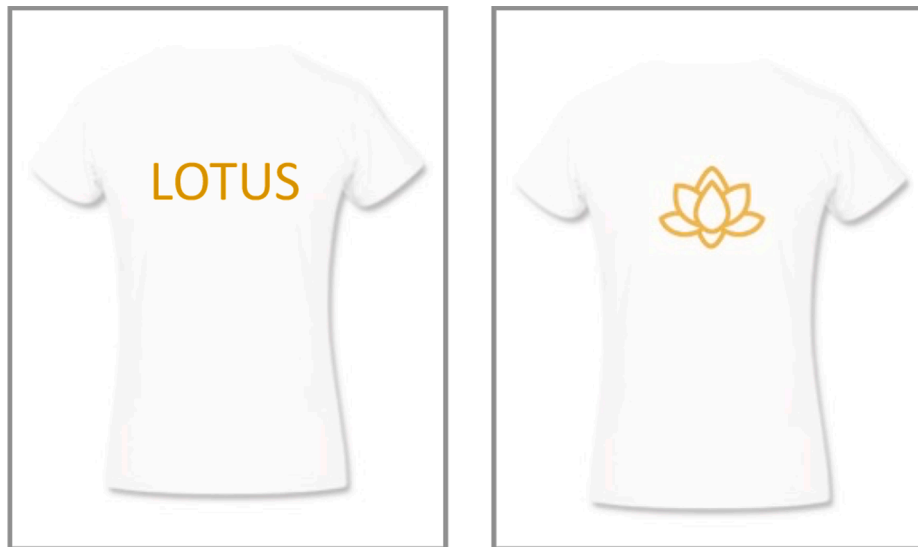


Fig. 5. Stimuli for Experiment 4A. Participants were told Emily chose either the shirt with the verbal logo (on the left) or the shirt with the verbal logo (on the right).

distance motivation⁶ ($\alpha = 0.85$), and appropriateness ($\alpha = 0.84$).

8.2. Results

We conducted a MANOVA with medium as the independent variable, and power, distance, and appropriateness as dependent variables. Emily was rated as more powerful in the verbal condition ($M = 4.98$, $SD = 1.46$), than in the visual condition ($M = 4.03$, $SD = 1.33$), $F(1, 289) = 33.56$, $p < .00001$, $\eta_p^2 = 0.104$. In addition, she was rated as desiring more social distance in the verbal condition ($M = 4.45$, $SD = 1.51$), than in the visual condition ($M = 3.78$, $SD = 1.44$), $F(1, 289) = 14.96$, $p < .00001$, $\eta_p^2 = 0.049$. Finally, Emily's choice of shirt was rated as less appropriate in the verbal condition ($M = 5.8$, $SD = 1.37$), than in the visual condition ($M = 6.23$, $SD = 0.93$), $F(1, 289) = 9.64$, $p < .002$, $\eta_p^2 = 0.032$.

Next, we conducted a mediation analysis with motivation for social proximity and perceived appropriateness as potential mediators (PROCESS model 4, Hayes, 2017). Consistent with our predictions, there was a significant indirect effect of medium on perceived power through perceived motivation for social proximity ($b = 0.28$, $SE = 0.088$; 95% CI = [0.123, 0.471]). Finally, perceived appropriateness negatively mediated the effect of medium on perceived power ($b = -0.086$, $SE = 0.045$; 95% CI = [-0.19, -0.013]).

8.3. Discussion

As predicted, Experiments 4A and 4B demonstrate that perceived motivation for social proximity mediates the effect of medium on the target person's perceived power. An additional finding of this study was that choosing the shirt with the verbal logo was rated as less appropriate than choosing the shirt with the visual logo. This result is somewhat surprising given previous findings that people perceive it less appropriate to use emojis and emoticons in formal settings (Glikson et al.,

2018; Riordan & Glikson, 2020). It is possible that the increased perceived appropriateness of the visual (vs. verbal) representation in our study results from the less formal setting we used (i.e., company retreat), or the type of visual representation we used (i.e., company logo).

An additional finding was that in Experiment 4B perceived appropriateness negatively mediated the effect of medium on perceived power. This latter result is consistent with research showing that going against the norm signals power (e.g., Bellezza et al., 2014; Van Kleef et al., 2011; Stamkou et al., 2020). Notably, because the effect of appropriateness on power was present only in Experiment 4B, it should be treated with caution. Most importantly, the predicted mediating effect of social distance motivations was significant across both experiments 4A and 4B. Finally, unlike our previous experiments, which either did not include the target person's gender (Experiments 1 and 3) or indicated the target was male (Experiment 2), in Experiment 4A and 4B the target was a female. The cumulative evidence suggests the effect of medium on perceived power is gender-insensitive.

9. Experiment 5: Social distance motivations moderate the effect of medium on perceived power

The aim of Experiment 5 was to provide converging evidence for the mediating role of social distance motivation by using a mediation-by-moderation design (Spencer, Zanna, & Fong, 2005). We asked whether providing participants with an incongruent signal regarding a target person's social distance motivation would undermine the effect of medium on the target person's perceived power. We employed a between-subject design with social distance information (incongruent vs. no information) and medium (verbal vs. visual) as independent variables. Participants learned about two bank employees, Kate (the target person), and Emily. First, participants either received social distance motivation information, or did not receive this information. Then, all participants learned about Kate and Emily's shirt choices. In the incongruent information condition, participants learned Kate had a social distance motivation that was incongruent with her later shirt choice. That is, if the participant later learned that Kate chose a verbal logo shirt, they first learned that Kate would like to get closer to Emily. If the participant later learned that Kate chose a visual logo shirt, they first learned that Kate was not particularly interested in getting closer to Emily. Emily's social distance motivation was always the opposite of Kate's. In the no-information condition, participants were only given irrelevant information (the location of Kate and Emily's offices). We predicted participants in the no-information condition would perceive

⁶ Dropping formality from the desired distance measure reduced the measure's reliability to $\alpha = 0.75$, but the main results did not change in a meaningful way. Emily was rated as desiring more social distance in the verbal condition ($M = 4.54$, $SD = 1.51$) than in the visual condition ($M = 3.91$, $SD = 1.49$), $F(1, 288) = 12.71$, $p < .0001$, $\eta_p^2 = 0.042$. There was a significant indirect effect of medium on perceived power through perceived motivation for social proximity ($b = 0.25$, $SE = 0.088$; 95% CI = [0.100, 0.44]). Perceived appropriateness also mediated the effect of medium on perceived power ($b = -0.077$, $SE = 0.042$; 95% CI = [-0.17, -0.008]).



Fig. 6. Stimuli for Experiment 4B. Participants were told Emily chose either the shirt with the verbal logo (on the left) or the shirt with the visual logo (on the right).

Kate as more powerful when she chose the verbal shirt than the visual shirt. The critical question was what would happen in the incongruent condition. If distance motivation moderates the effect of medium on perceived power, then distance motivation which is incongruent with medium should reduce the effect of medium on perceived power.

9.1. Method

Participants. Three hundred ninety-three Prolific workers completed the survey in exchange for payment. This experiment included a manipulation check question. Following the recommendations of [Meyvis and Van Osselaer \(2018\)](#), we excluded 36 participants who erroneously answered the manipulation check question (described below), resulting in a final sample of 357 participants (189 females, 162 males, 6 “other”; $M_{age} = 36.57$, $SD = 12.77$). With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen’s $f = 0.15$, or a small-to-medium-sized effect.

Procedure. Participants were randomly assigned to one cell of the 2 (social distance information: incongruent vs. no information) \times 2 (medium: verbal vs. visual) between-subjects design. Participants were told they would perform a person perception task in which they would form an impression of a person named Kate. As described above, participants in the incongruent condition were given information about Kate’s social distance motivation that was incongruent with her later shirt choice. For example, participants in the incongruent-verbal condition read the following text:

“Imagine a bank named Goldfinch Bank. Kate and Emily both work at the bank. They work in a department that consists of both senior and junior employees. Here is some information about Kate and Emily. Emily is not particularly interested in getting socially closer to Kate. For example, she is not interested in Kate’s personal life, does not remember the names of Kate’s family members, or the date of Kate’s birthday. In contrast, Kate is very interested in getting socially closer to Emily. For example, she is curious about Emily’s personal life, remembers Emily’s husband and children’s names, and the date of Emily’s birthday.”

Participants in the incongruent-visual condition saw the same information, but with the descriptions of Kate and Emily reversed so that Kate wanted to maintain social distance from Emily.

In the no-information condition participants read the following:

“Imagine a bank named Goldfinch Bank. Kate and Emily both work at the bank. They work in a department that consists of both senior and junior employees. Here is some information about Kate and Emily. Emily’s office is located on the west wing of the building. In contrast, Kate’s office is located on the east wing of the building. There is also a central area in the building where the main meeting room is located.”

Next, participants learned that Goldfinch Bank held a retreat at which employees were asked to choose between goodie bags with one of two shirts: one with a verbal logo or one with a visual logo. Participants in the verbal condition learned Kate chose the verbal logo and Emily the visual logo. Participants in the visual logo condition learned Kate chose the visual logo and Emily the verbal logo. Then participants were asked to evaluate Kate’s perceived power using 9-point semantic differential scales (two items: much less dominant than Emily/much more dominant than Emily; much less powerful than Emily/much more powerful than Emily, $\alpha = 0.78$). Last, we asked participants to indicate what they had been told in the scenario they had just read (Kate is not particularly interested in getting socially closer to Emily; Kate is very interested in getting socially closer to Emily; Kate’s office is located on the east wing of the building; I don’t remember). We excluded from the analyses the data for all participants who failed this question.

9.2. Results and discussion

The results appear in [Fig. 7](#). We conducted a 2-way ANOVA with information (incongruent vs. no information) and chosen medium (picture vs. word) as independent variables, and perceived power as the dependent measure. The interaction was significant $F(1, 353) = 10.31$, $p < .001$, $\eta_p^2 = 0.028$. As predicted, and consistent with our previous studies, participants in the no-information condition rated Kate as more powerful when she chose the verbal logo shirt ($M = 5.5$, $SD = 1.29$), than when she chose the visual logo shirt ($M = 4.9$, $SD = 1.65$), $p < .02$. In contrast, participants in the incongruent information condition rated Kate as more powerful when her motivation was for social distance and she chose the visual logo shirt ($M_{visual} = 5.8$, $SD_{visual} = 1.62$), than when her motivation was for social proximity and she chose the verbal logo

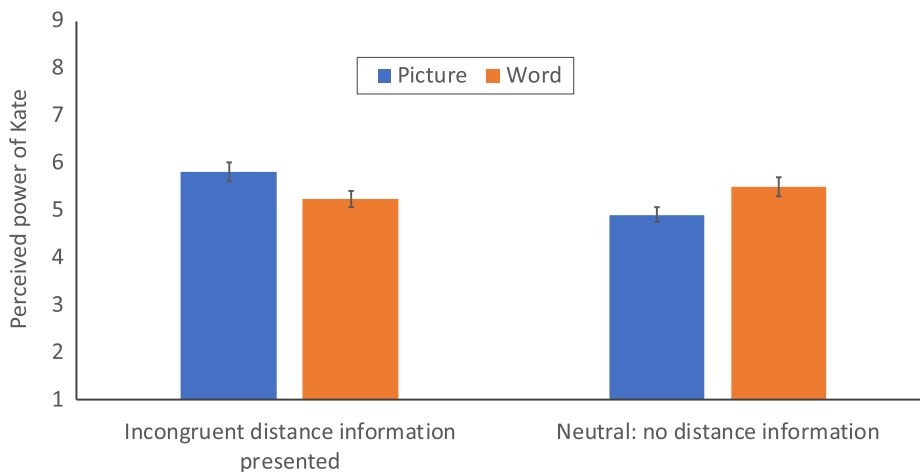


Fig. 7. Results of Experiment 5. In the presence of distance information that conflicted with the targets choice of shirt (incongruent conditions), Kate was rated as more powerful when her motivation was for social distance and she chose the visual logo shirt, than when her motivation was for social proximity and she chose the verbal logo shirt. In the absence of distance information (no-information conditions), Kate was rated as more powerful when she chose the verbal logo shirt than when she chose the visual logo shirt.

shirt ($M = 5.2$, $SD = 1.98$), $p < .027^7$. Put differently, providing explicit social distance motivation information overwhelms the effect of visual versus verbal signals. Finally, there was a marginal main effect for information, $F(1, 353) = 3.32$, $p < .069$, $\eta_p^2 = 0.009$, such that participants in the incongruent information condition rated Kate as more powerful than participants in the no-information condition ($M = 5.48$, $SD = 1.86$ vs. $M = 5.14$, $SD = 1.54$). The effect of medium was not significant, $F < 1$, $p = .96$.

In summary, together with Experiment 4, Experiment 5 shows medium affects perceived power by affecting the perceived distance motivations of the target person.

10. Experiment 6: Behavioral outcome

Experiments 1–5 demonstrate that people who use words are perceived as more powerful than those who use pictures. Do people also choose a person who uses words (vs. pictures) to represent them in a consequential context that requires a powerful person? We tested this question in Experiment 6 using an important, ubiquitous, and timely organizational interaction context, namely an online meeting over Zoom, with real-time interactions and an incentive compatible payoff. Participants were told they would be part of a team with two other participants. They were assigned to the role of the team's human resource manager and were asked to select one of two team members, based on their Zoom profiles, to represent them in a negotiation game. One team member chose a verbal Zoom profile, and the other chose a pictorial Zoom profile. The participants were told that because of the aggressive nature of the game, a powerful representative would be more likely to win it. We hypothesized participants would perceive the team member who chose a verbal Zoom profile to be more powerful than the team member who chose a picture Zoom profile, and thus would be more likely to select the team member who chose the verbal Zoom profile to represent them in the negotiation game.

⁷ An analysis including the thirty-six participants who failed the manipulation check yielded similar findings. The interaction was significant $F(1, 389) = 7.17$, $p < .008$, $\eta_p^2 = 0.018$. Participants in the no information condition rated Kate as slightly more powerful when she chose the verbal logo shirt than when she chose the visual logo shirt ($M_{\text{verbal}} = 5.37$, $SD_{\text{verbal}} = 1.45$ vs. $M_{\text{visual}} = 4.94$, $SD_{\text{visual}} = 1.69$), $p < .089$. In contrast, participants in the incongruent condition rated Kate as more powerful when her motivation was for social distance and she chose the visual logo shirt, than when her motivation was for social proximity and she chose the verbal logo shirt ($M_{\text{visual}} = 5.75$, $SD_{\text{visual}} = 1.63$ vs. $M_{\text{verbal}} = 5.22$, $SD_{\text{verbal}} = 2.00$), $p < .038$.

10.1. Method

Participants. One hundred ninety-seven MTurk workers (98 females, 99 males; $M_{\text{age}} = 40.41$, $SD = 12.49$), who participated in the experiment for payment. With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $w = 0.20$, or a small-to-medium-sized effect.

Procedure. The experimental procedure was adapted from Chou (2018; Study 5). Participants were informed the purpose of the experiment was to understand people's behavior in organizational contexts. Participants were told they would be assigned to a team with two other participants, and that one of their team members would subsequently play a negotiation game against a member from another team. They were further told that teams that won the negotiation game would be entered into a raffle for \$60. Next, participants were told they were randomly chosen to be the team's human resource manager. (In reality, all participants were assigned this role). In this role, their job was to choose one of the two remaining team members to play in a negotiation game on their team's behalf, against a representative from the other team. The negotiation game was described as involving money dealings between two players, and participants were told that a powerful and dominant negotiator with authority would have an advantage in the game. Next, participants were told their two team members were going to create Zoom profiles to introduce themselves to the human resource manager (i.e., the participant). Purportedly to protect their anonymity, we told the participants that the two team members would be using the fake names "Almond" and "Cashew." Then, there was a short wait during which the two players supposedly chose a Zoom profile out of several options offered to them. Then the two players "sent" their profiles to the participant. We counterbalanced the object and medium across participants: One group of participants saw one profile with a picture of an almond and a second profile with the word cashew. The second group saw one profile with the word almond and a second profile with a picture of a cashew (see Fig. 8). Participants chose their group's representative and then were told their representative would play the negotiation game. Finally, we told participants we would conduct the raffle in a couple of days after all teams had competed and would directly add a bonus to the accounts of all the members of the winning team that won the lottery. Subsequently, we paid three members of a randomly selected team a bonus of \$20 each (\$60 in total).

10.2. Results and discussion

We conducted a binomial test of proportions of answers for a single population. Sixty-two percent of the participants chose the team member with the verbal Zoom profile to be their team's representative, while only 38% of the participants chose the player with the picture Zoom profile, $p < .001$.



Fig. 8. Stimuli of Experiment 6. One group of participants saw a profile with the word almond and a profile with a picture of a cashew (top row). The second group saw a profile with a picture of an almond and a profile with the word cashew (bottom row).

These results suggest that participants not only judge communicators that use verbal representations as more powerful than communicators that use visual representations, but that they are also willing to make financially consequential choices based on these judgments.

11. Experiment 7: Strategic use of medium

Do people strategically use medium to influence how others perceive them? Put differently, are people *less* likely to use pictures when they want others to perceive them as more powerful, and *more* likely to use pictures when they want others to perceive them as less powerful?

Experiment 7 aimed to test this question. Participants imagined preparing to negotiate a rent discount with their landlord. We manipulated participants' power-signaling motivations by telling one group of participants that signaling *high* power benefits negotiators, and the other group that signaling *low* power benefits negotiators. Participants were then asked to choose which shirt they would wear for the negotiation meeting with the landlord. One shirt had a verbal logo of a sports team, and the other a visual logo of the same team. For generalizability, we ran the same experiment twice, each time with a different team. In Experiment 7A the team was the Miami Dolphins (football) and in Experiment 7B it was the Red Sox (baseball). We predicted participants would be more likely to choose the shirt with the verbal logo (vs. visual logo) when their goal was to signal more (vs. less) power.

12. Experiment 7A: The Miami Dolphins

12.1. Method

Participants. We aimed to collect data from 200 participants. We ended up collecting data from 199 MTurk workers (103 females, 95 males, 1 participant did not report gender; $M_{age} = 40.54$, $SD = 13.28$). With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $w = 0.20$, or a small-to-medium-sized effect.

Procedure. Participants were randomly assigned to either the low-power-goal or high-power-goal condition. Participants were asked to

imagine they would like to rent an apartment. They were further asked to imagine they found a suitable apartment, but the rent was too high, therefore they would like to negotiate the rent with the landlord. Then, they were given "Tips for rent negotiation." In the low-power condition (high-power condition in brackets) participants read:

According to experts, when a negotiator believes the person they are bargaining with has a low-power [high-power] position, this throws the negotiator off guard because the other person seems less threatening [because the other person seems able to walk away]. Consequently, the negotiator offers better deals. Therefore, coming into this negotiation, you are more likely to lower the rent by making the landlord believe that you have a low-power [high-power] position. In all stages of the negotiation, try to form the impression that you are low power [high power].

Next, participants were asked to choose which shirt to wear to the meeting with the landlord. They were given two options, one with the verbal logo "Miami Dolphins" and one with the visual logo of the Miami Dolphins (Fig. 9). The order of the two shirts was randomized. Then, we asked them to indicate their familiarity with the Miami Dolphins (yes vs. no).

12.2. Results

Consistent with our predictions, more participants chose the shirt with the visual logo when their goal was to be perceived as having low power (63%) than when their goal was to be perceived as having high power (35%), $\chi^2(1, 199) = 16.35$, $p < .0001$. Put differently, the majority of participants chose the medium aligned with their goal: 63% of participants chose the visual logo when wanting to communicate lower power and 65% of participants chose the verbal logo when wanting to communicate higher power.

Familiarity with the Miami Dolphins did not affect this choice pattern. We repeated the analysis without the 22 participants who reported not being familiar with the Miami Dolphins (11 participants in each power condition). Again, more participants chose to wear the shirt



Fig. 9. The two shirts participants could choose from in Experiment 7A.

with the visual logo when their goal was to be perceived as having low power (65%) than when their goal was to be perceived as having high power (31%), $\chi^2(1, 177) = 19.702, p < .0001$.

13. Experiment 7B: The Red Sox

Participants. We aimed to collect data from 200 participants. We ended up getting responses from 197 MTurk workers (92 females, 104 males, 1 participant did not report their gender; $M_{age} = 38.09, SD = 10.97$) who participated in the experiment for payment. With this sample size and a 0.05 alpha level, we had 80% power to detect Cohen's $w = 0.21$, or a small-to-medium-sized effect.

Procedure. The design and procedure were identical to that of Experiment 7A. We replaced the medium stimuli so that participants chose between a shirt with the verbal logo "Red Sox" and a shirt with the visual logo of the Red Sox.

13.1. Results and discussion

Consistent with our predictions, more participants chose the shirt with the visual logo when their goal was to be perceived as having low power (65%) than when their goal was to be perceived as having high power (15%), $\chi^2(1, 197) = 50.09, p < .001$. Put differently, the majority of participants chose the medium aligned with their goal: 65% of participants chose the visual logo when wanting to communicate lower power and 85% of participants chose the verbal logo when wanting to communicate higher power.

Familiarity with the Red Sox did not affect this choice pattern. We repeated the analysis without the 18 participants who reported not being familiar with the Red Sox. Again, more participants chose to wear the shirt with the visual logo when their goal was to be perceived as having low power (66%) than when their goal was to be perceived as having high power (16%), $\chi^2(1, 179) = 46.31, p < .001$.

In summary, the results of Experiments 7A and 7B show people strategically use medium to influence their perceived power. Note that we do not wish to argue that this adaptive behavior means people are consciously aware of the medium-power association. Indeed, recent research suggests the *meta*-motivation people use to regulate and direct their actions (Fujita, Scholer, Miele, & Nguyen, 2019), can be tacit or operate implicitly (Reber, 1989; Wagner & Sternberg, 1985).

13.2. General discussion

We examined the hypothesis that representation medium signals power. In particular, we hypothesized that people who use words are perceived as having more power than those who use pictures; that desire for social proximity mediates the effect of medium on power; and that people who want to be perceived as having more power prefer using words to pictures. Seven experiments provide support for these hypotheses. Experiments 1–5 show people perceive those who use words (vs. pictures) as more powerful. Experiments 4–5 show that desire for social proximity mediates the effect of medium on power. Further, Experiments 1–2 show the effect of medium on power is selective: medium did not consistently influence perceived warmth, competence, or judgmentalness. Experiment 6 shows a consequential effect of medium choice: in the context of an incentive compatible decision, participants were more likely to choose a person with a word-based Zoom profile for a role requiring high power than a person with a picture-based Zoom profile. Finally, Experiment 7 shows people use medium strategically: they choose the verbal medium when wanting to be perceived as having more power, and the visual medium when wanting to be perceived as having lower power. Across experiments, we rule out several alternative explanations, including differences in content across mediums, the appropriateness of using the medium, and the communicator's perceived age. We also show the effect of medium on perceived power is not gender-specific, occurring when the target person's gender is unknown (Experiments 1, 3, and 6), clearly male (Experiment 2), or clearly female (Experiments 4–5).

To check the cross-study consistency of our effects we conducted a meta-analysis following Johnson and Eagly (2000). The data of Experiments 1–4, in which we measured perceived power, were included in the analysis. We did not include Experiment 5 because it included conflicting distance information, and Experiments 6 and 7, which required medium choice. Effect sizes (Cohen's d) were computed as the standardized difference between the mean of the verbal condition and the mean of the pictorial condition. The results are presented as forest plot in Fig. 10.

The meta-analysis yielded a weighted mean d of 0.51, with a 95% confidence interval (CI) that did not include zero (95% CI = 0.39, 0.63). Evaluating significance, the unit-normal z value for the weighted mean d was 8.57 ($p < .0001$). This outcome indicates that, across our studies, people who used words were perceived as more powerful than people who used pictures.

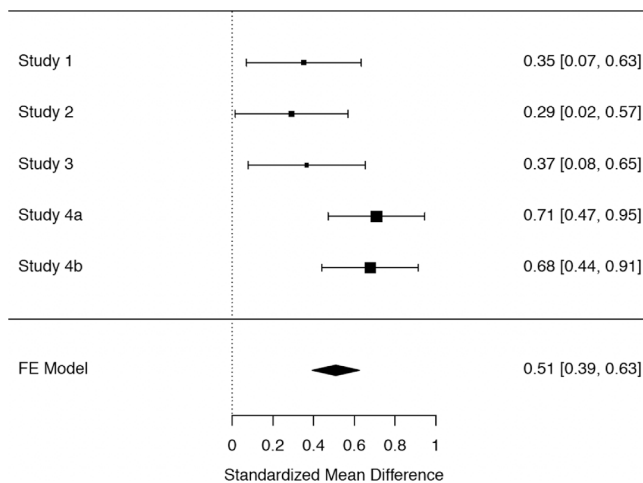


Fig. 10. Forest plot of the effect sizes (Cohen's *d*) of medium (visual vs. verbal) on perceived power in Studies 1–4 using fixed effects. The diamond represents the pooled effect size across studies (calculated using a fixed effects model) and circles represent the effects of individual studies. Error bars and values in brackets indicate 95% confidence intervals.

13.2.1. Desire for social proximity as a mediator and alternative accounts

We argue that pictures signal lower perceived power than words because they signal desire for social proximity (versus social distance). One alternative explanation is that using pictures harmed the targets' perceived competence, and that, in turn, signaled low power (Chapais, 2015; Waksalak et al., 2014). As mentioned above, research finds that in formal settings emoticon use (i.e., icons of faces expressing emotion) lowers the communicator's perceived competence (Glikson et al., 2018). In contrast, in the current research across various contexts (formal and informal) and types of representations (e.g., emojis, logos), we consistently found pictorial representations did not harm targets' perceived competence. One explanation for the discrepancy in findings relates to the increase in popularity of using pictures in digital media and social platforms. This increase may make it more normative and acceptable to use pictures across contexts, which in turn, could make users of pictures appear as competent as users of words. The growing popularity of pictorial representations may have different effects on competence and power perceptions, an interesting direction for future research.

A second alternative explanation is that pictures elicit stronger emotions than words (e.g., Amit & Greene, 2012; Holmes et al., 2008; Kensinger & Schacter, 2006; Mathews et al., 2013), and that the emotional quality of pictures harms perceived power. This account, however, is unlikely. First, the stimuli we used were not particularly emotional, but rather simple objects such as flower, bird, and shirt. Second, when we directly measured perceived warmth (a potential proxy for emotional reaction), it was not affected by medium.

Third, we explored the role of appropriateness in mediating the effect of medium on perceived power. Two issues are worthy of discussion regarding this exploration. First, research shows people perceive it less appropriate to use emojis and emoticons in formal settings (Glikson et al., 2018; Riordan & Glikson, 2020). In contrast, participants in our studies perceived a visual logo as more appropriate than a verbal logo when forming an impression based on company identifiers. We offer two potential explanations for this discrepancy. First, we studied impression formation in a less formal context (i.e., company retreat) than did Glikson et al. (2018), and Riordan and Glikson (2020). Second, we used company logos, whereas these previous studies used emojis/emoticons, something which may affect perceived appropriateness. Second, previous research shows that going against the norm signals power (e.g., Bellezza et al., 2014; Van Kleef et al., 2011; Stamkou et al., 2020). Consistent with this finding, in Experiment 4B we found that perceived appropriateness negatively mediated the effect of medium on perceived

power. However, because the effect of appropriateness on power did not replicate in Experiment 4A, it should be treated with caution. Critically, the predicted mediating effect of social distance motivations was significant across both experiments.

A final alternative explanation is that use of pictorial representations signals youth, and younger people tend to be perceived as less powerful than adults. Consistently, research shows senders who use emojis appear childish (Provine et al., 2007). However, two findings from our research refute this account. First, in Experiment 2, medium did not affect the sender's perceived age. Second, in Experiments 4A and 4B the visual logo was not perceived as sillier than the verbal logo.

13.2.2. Robust effect across various types of visual representations

Our experiments included several picture types that vary in their level of abstraction. In Experiments 1, 4, 5, and 7 we used organizational logos (real and fictitious) that represent identical objects in the visual and verbal conditions. In Experiments 2 and 3, emojis replaced words with the same meaning. Finally, in Experiment 6 we used names and photographs of nuts (almond and cashew). Notably, while logos are impoverished outline drawings without much detail, emojis include more detail, and colored photographs include even more detail (Rosch et al., 1976). Using several types of pictures was important for generalization across different types of pictures (logos, emojis, photographs) and for making a broader point about the difference between pictorial and verbal representations. Across the various picture types, we consistently found pictures signal lower power than words, attesting to the robustness of the effect of medium on perceived power.

13.2.3. The strategic use of medium

The extensive use of pictures in digital communication may suggest few people desire to feel powerful, be powerful, or signal power. This suggestion runs counter to literature regarding the prevalence of the power motive (e.g., McClelland, 1985; Winter, 1988). Why, then, is picture use in communication so common? First, people may not find conveying a position of power important in many digital communications, such as when interacting with a friend or family member. Second, people may sometimes be motivated to present themselves as less powerful or as having no power at all, for example, wanting to be perceived as less threatening, or as a team player, rather than a powerful boss (Ohala, 1994; Schaerer, Swaab, & Galinsky, 2015). Third, people may be motivated to use pictures for reasons unrelated to power. For example, Skovholt et al. (2014) suggest emojis signal a positive attitude, strengthen expressive speech acts (such as thanks or greetings), and soften directives (e.g., requests, or corrections). Torrez et al. (2019) suggest using pictures signals a desire for closeness with the recipient. In situations where people use pictures for these reasons, perceived power considerations may be less salient. Finally, people may choose to use pictures to disambiguate messages (Kaye et al., 2017), and can enhance processing fluency (Daniel & Camp, 2020).

Notably, although the use of pictures may serve the sender's goals on some occasions, in others, the norm or habit of picture use may harm the sender's power-signaling goals. People may also choose to use pictures in the face of conflicting goals. For example, a person may want to communicate a positive affective reaction towards colleagues from work, while also wanting to maintain a powerful position. Using pictures would serve the first goal but not the second goal (Derks et al., 2008; Gesselman et al., 2019; Kaye et al., 2017). Further research is needed to more thoroughly test the adaptive nature of picture use and to reveal how people balance conflicting goals when choosing a medium of communication.

13.2.4. Research limitations and future directions

One limitation of our research regards the picture stimuli we used. Most of our experiments included pictures of simple objects. We chose stimuli with these characteristics for two reasons. First, these types of visual representations are popular nowadays. Therefore, exploring how

people react to their use is important. Second, using these stimuli enabled us to compare the effects of pictures and words while keeping the information conveyed across mediums as similar as possible. However, with the growing popularity of social media that enables people to share not only pictures but also videos (e.g., YouTube, TikTok), future research may investigate the power signaling implications of using video, GIFs, and other pictorial representations that change temporally.

A second limitation of this research concerns our focus on the effects of using visual representations in situations where the communicator's power is unknown. An intriguing question is what happens when the communicator's power is known. For example, how would a CEO who uses emojis in a message or wears a shirt with a visual organization logo at a company retreat be perceived? Picture use could harm the CEO's perceived power, because it implies they seek proximity with their subordinates: an act that violates the implicit expectation that powerful people seek distance (Magee & Smith, 2013). An alternative intriguing possibility is that knowing the CEO is powerful would reshape expectations regarding powerful peoples' distance motivations and expand the legitimate borders of manager behaviors. This question awaits future research.

A final limitation of our research is that we did not conduct a true field experiment which could provide additional compelling evidence for our results. A field study would show whether our effect is robust to less controlled, noisy circumstances. Future research that would test the effect of medium on perceived power in the field would therefore make a significant contribution.

13.2.5. Practical and theoretical implications

Our research has implications for practice in organizations. Power-signaling in the workplace is important (Anderson et al., 2012; Huang et al., in press; Kilduff & Galinsky, 2013; Mayew et al., 2013; Rey et al., 2016). Employees have various motivations for using pictorial representations in their messages, but our research shows pictures signal low power, which employees may not want to do. Being labeled as having low power could be particularly damaging for women, who tend to use emojis in messages (Chen, Lu, Shen, Ai, Liu, & Mei, 2017), and who are often perceived as less powerful than males (Acker, 2006; Haslam & Ryan, 2008; Ibarra, Carter, & Silva, 2010). To reduce the potential negative effect of picture use on power perception, organizations could increase employees' awareness of the effect.

From a theoretical perspective, our research extends the Social Distance Theory of Power (Magee & Smith, 2013), by providing the first evidence that a person is seen as more powerful when they seem to want to keep their distance from others. This result suggests that other behaviors that imply a desire for distance vs. proximity could be effective ways to signal power.

Finally, our findings suggest researchers and companies could learn about people by examining their medium choices. In recent years, using text analysis to learn about people has become a widespread practice (e.g., Berger et al., 2020). The advantage of using medium analysis over text analysis to learn about people is that it involves less invasion of the communicator's privacy. While text analysis requires analyzing unstructured textual information to learn about attitudes and feelings (Berger et al., 2020; Humphreys & Wang, 2018), medium analysis does not. Thus, a practical implication of our research is that researchers and organizations can gain an understanding of employees as well as customers by examining their medium of communication.

13.2.6. Additional demographic information about the experiments

Participants in all the experiments were from the United States. There were no other a-priori limitations on the sample. Payment ranged between \$0.25 and \$0.50 for participant. Experiment 6 was run on Prolific. All other experiments were run on MTurk.

Experiment 1: Two hundred participants (Females = 105, Males = 95; $M_{age} = 39.28$, $SD = 12.56$). English proficiency was measured with a binary question (are you a native English speaker? yes/no). 196

participants reported they are native English speakers, 4 not.

Experiment 2: Two hundred one participants (Females = 108, Males = 92, 1 did not report gender; $M_{age} = 36.26$, $SD = 11.63$). English proficiency was measured with a binary question (are you a native English speaker? yes/no). 195 native English speakers, 6 not.

Experiment 3: One hundred and eighty-eight participants (82 females and 106 males; $M_{age} = 40.07$, $SD = 13.4$). English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.89, std = 0.34.

Experiment 4A: Two hundred and ninety MTurk workers ($M_{age} = 39.9$, $SD = 12.87$; 143 females, 145 males; 2 participants reported "other" for gender). English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.83, std = 0.55. Level of education was measured on a 5-points scale (1 = some high school, 2 = high school diploma, 3 = some college, 4 = college graduate, 5 = postgraduate degree). The average education level was 3.76, std = 0.847. The ethnic background of the participants was diverse: 5 Indians/native Americans, 37 Asians, 19 blacks, 13 Hispanic/Latino, 3 Middle-Eastern, 222 White, and 1 "other".

Experiment 4B: Two hundred and ninety MTurk workers ($M_{age} = 40.19$, $SD = 11.95$; 149 females, 140 males; 1 participant reported "other" for gender). Level of education was measured on a 5-points scale (1 = some high school, 2 = high school diploma, 3 = some college, 4 = college graduate, 5 = postgraduate degree). Mean level of education was 3.69, std = 0.93. English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.96, std = 0.207. The ethnic background of the participants was diverse: 1 Indians/native Americans, 32 Asians, 22 blacks, 11 Hispanic/Latino, 1 Middle-Eastern, 234 White.

Experiment 5: 357 Prolific workers ($M_{age} = 36.57$, $SD = 12.77$; 189 females, 162 males; 6 participant reported "other" for gender). Level of education was measured on a 5-points scale (1 = some high school, 2 = high school diploma, 3 = some college, 4 = college graduate, 5 = postgraduate degree). Mean level of education was 3.78, std = 0.99. English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.90, std = 0.34. The ethnic background of the participants was diverse: 37 Asians, 38 blacks, 17 Hispanic/Latino, 1 Middle-Eastern, 255 White, and 7 "other".

Experiment 6: 197 MTurk workers ($M_{age} = 40.41$, $SD = 12.49$; 98 females, 99 males). Level of education was measured on a 5-points scale (1 = some high school, 2 = high school diploma, 3 = some college, 4 = college graduate, 5 = postgraduate degree). Mean level of education was 3.59, std = 0.86. English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.96, std = 0.19. The ethnic background of the participants was diverse: 8 Asians, 18 blacks, 8 Hispanic/Latino, 1 American Indian, and 170 White.

Experiment 7A: 199 Mturk workers ($M_{age} = 40.54$, $SD = 13.28$; 103 females, 95 males; 1 participant reported "other" for gender). English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.93, std = 0.24.

Experiment 7B: 179 Mturk workers ($M_{age} = 36.64$, $SD = 13.12$; 92 females, 85 males; 2 participant reported "other" for gender). English proficiency was measured on a 5-points scale (1 = basic, 2 = intermediate, 3 = advanced, 4 = fluent, 5 = native). The average English proficiency of the participants was 4.86, std = 0.52.

CRedit authorship contribution statement

Elinor Amit: Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Writing - original draft, Writing - review and

editing. **Shai Danziger:** Conceptualization, Formal analysis, Methodology, Supervision, Writing - original draft, Writing - review and editing. **Pamela K. Smith:** Conceptualization, Writing - review and editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We wish to thank Emily Siff for helpful discussions and data collection. This research was supported by the Israel Science Foundation grant 3014/21 to Elinor Amit and the Israel Science Foundation grant 363/19 to Shai Danziger and by the Henry Crown Institute of Business Research.

References

- Acker, J. (2006). Inequality regimes: Gender, class, and race in organizations. *Gender & Society*, 20(4), 441–464.
- Ames, D. R., & Flynn, F. J. (2007). What breaks a leader: The curvilinear relation between assertiveness and leadership. *Journal of Personality and Social Psychology*, 92(2), 307.
- Amit, E., Algom, D., & Trope, Y. (2009). Distance-dependent processing of pictures and words. *Journal of Experimental Psychology: General*, 138(3), 400.
- Amit, E., Algom, D., Trope, Y., & Liberman, N. (2008). Thou shalt not make unto thee any graven image[†]: The distance-dependence of representation. *The Handbook of Imagination and Mental Simulation*, 53–68.
- Amit, E., & Greene, J. D. (2012). You see, the ends don't justify the means: Visual imagery and moral judgment. *Psychological Science*, 23(8), 861–868.
- Amit, E., Hoeflin, C., Hamzah, N., & Fedorenko, E. (2017). An asymmetrical relationship between verbal and visual thinking: Converging evidence from behavior and fMRI. *NeuroImage*, 152, 619–627.
- Amit, E., Rim, S., Halbeisen, G., Priva, U. C., Stephan, E., & Trope, Y. (2019). Distance-dependent memory for pictures and words. *Journal of Memory and Language*, 105, 119–130.
- Amit, E., Wakslak, C., & Trope, Y. (2013). The use of visual and verbal means of communication across psychological distance. *Personality and Social Psychology Bulletin*, 39(1), 43–56.
- Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. (2012). A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology*, 103(4), 718–735.
- Bellezza, S., Gino, F., & Keinan, A. (2014). The red sneakers effect: Inferring status and competence from signals of nonconformity. *Journal of Consumer Research*, 41(1), 35–54.
- Berger, J., Humphreys, A., Ludwig, S., Moe, W. W., Netzer, O., & Schweidel, D. A. (2020). Uniting the tribes: Using text for marketing insight. *Journal of Marketing*, 84(1), 1–25.
- Case, C. R., Conlon, K. E., & Maner, J. K. (2015). Affiliation-seeking among the powerless: Lacking power increases social affiliative motivation. *European Journal of Social Psychology*, 45, 378–385.
- Carnevale, J. J., Fujita, K., Han, H. A., & Amit, E. (2015). Immersion versus transcendence: How pictures and words impact evaluative associations assessed by the implicit association test. *Social Psychological and Personality Science*, 6(1), 92–100.
- Chapais, B. (2015). Competence and the evolutionary origins of status and power in humans. *Human Nature*, 26(2), 161–183.
- Chen, Z., Lu, X., Shen, S., Ai, W., Liu, X., & Mei, Q. (2017). Through a gender lens: an empirical study of emoji usage over large-scale android users. *arXiv preprint arXiv:1705.05546*.
- Chiao, J. Y., Iidaka, T., Gordon, H. L., Nogawa, J., Bar, M., Aminoff, E., et al. (2008). Cultural specificity in amygdala response to fear faces. *Journal of Cognitive Neuroscience*, 20(12), 2167–2174.
- Chiao, J. Y. (2010). Neural basis of social status hierarchy across species. *Current Opinion in Neurobiology*, 20(6), 803–809.
- Chou, E. Y. (2018). Naysaying and negativity promote initial power establishment and leadership endorsement. *Journal of Personality and Social Psychology*, 115(4), 638.
- Cramer, H., de Juan, P., & Tetreault, J. (2016). Sender-intended functions of emojis in US messaging. In *Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services* (pp. 504–509).
- Corballis, M. C. (2014). *The recursive mind: The origins of human language, thought, and civilization-updated edition*. Princeton University Press.
- Copeland, J. T. (1994). Prophecies of power: Motivational implications of social power for behavioral confirmation. *Journal of Personality and Social Psychology*, 67(2), 264–277.
- Coulmas, F. (2003). *Writing systems. An introduction to their linguistic analysis* (pp. 249–268).
- Damasio, A. R., & Damasio, H. (1992). Brain and language. *Scientific American*, 267(3), 88–109.
- Daniel, T. A., & Camp, A. L. (2020). Emojis affect processing fluency on social media. *Psychology of Popular Media*, 9(2), 208.
- Derks, D., Bos, A. E., & Von Grumbkow, J. (2008). Emoticons in computer-mediated communication: Social motives and social context. *Cyberpsychology & Behavior*, 11(1), 99–101.
- Derks, D., Fischer, A. H., & Bos, A. E. (2008). The role of emotion in computer-mediated communication: A review. *Computers in Human Behavior*, 24, 766–785.
- Douglas, K. M., & Sutton, R. M. (2010). By their words ye shall know them: Language abstraction and the likeability of describers. *European Journal of Social Psychology*, 40, 366–374.
- Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review*, 31–41.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191.
- Fiske, A. P. (1992). The four elementary forms of sociality: Framework for a unified theory of social relations. *Psychological Review*, 99(4), 689–723.
- Fiske, S. T. (1993). Controlling other people. The impact of power on stereotyping. *American Psychologist*, 48, 621–628.
- Fiske, S. T. (2010). Interpersonal stratification: Status, power, and subordination. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 941–982). John Wiley & Sons Inc.
- Fiske, S. T., & Berdahl, J. (2007). Social power. In A. W. Kruglanski, & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 678–692). New York: Guilford.
- Fiske, S. T., Cuddy, A. J., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82(6), 878.
- Foucault, M. (1980). Power/Knowledge, ed. Colin Gordon. *Trans. Colin Gordon et al. New York: Harvester Wheatsheaf*.
- Foulk, T. A., De Pater, I. E., Schaerer, M., du Plessis, C., Lee, R., & Erez, A. (2020). It's lonely at the bottom (too): The effects of experienced powerlessness on social closeness and disengagement. *Personnel Psychology*, 73(2), 363–394.
- Fujita, K., Scholer, A. A., Miele, D. B., & Nguyen, T. (2019). On metamotivation: Consumers' knowledge about the role of construal level in enhancing task performance. *Journal of the Association for Consumer Research*, 4(1), 57–64.
- Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. (2003). From power to action. *Journal of Personality and Social Psychology*, 85(3), 453.
- Garrison, A., Remley, D., Thomas, P., & Wierszewski, E. (2011). Conventional faces: Emoticons in instant messaging discourse. *Computers and Composition*, 28(2), 112–125.
- Gazzaniga, M. S. (2009). *The cognitive neurosciences*. MIT Press.
- Glaser, W. R. (1992). Picture naming. *Cognition*, 42(1–3), 61–105.
- Gesselman, A. N., Ta, V. P., & Garcia, J. R. (2019). Worth a thousand interpersonal words: Emoji as affective signals for relationship-oriented digital communication. *PLoS One*, 14(8), Article e0221297.
- Giessner, S. R., & Schubert, T. W. (2007). High in the hierarchy: How vertical location and judgments of leaders' power are interrelated. *Organizational Behavior and Human Decision Processes*, 104(1), 30–44.
- Glikson, E., Cheshin, A., & Van Kleef, G. A. (2018). The dark side of a smiley: Effects of smiling emoticons on virtual first impressions. *Social Psychological and Personality Science*, 9(5), 614–625.
- Greer, L. L., Caruso, H. M., & Jehn, K. A. (2011). The bigger they are, the harder they fall: Linking team power, team conflict, and performance. *Organizational Behavior and Human Decision Processes*, 116(1), 116–128.
- Goodwin, S. A., Gubin, A., Fiske, S. T., & Yzerbyt, V. Y. (2000). Power can bias impression processes: Stereotyping subordinates by default and by design. *Group Processes and Intergroup Relations*, 3, 227–256.
- Johnson, B. T., & Eagly, A. H. (2000). *Quantitative synthesis of social psychological research*. Hall, J. A., Coats, E. J., & LeBeau, L. S. (2005). Nonverbal behavior and the vertical dimension of social relations: A meta-analysis. *Psychological Bulletin*, 131(6), 898.
- Haslam, S. A., & Ryan, M. K. (2008). The road to the glass cliff: Differences in the perceived suitability of men and women for leadership positions in succeeding and failing organizations. *The Leadership Quarterly*, 19(5), 530–546.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.
- Holmes, E. A., Mathews, A., Mackintosh, B., & Dalgleish, T. (2008). The causal effect of mental imagery on emotion assessed using picture-word cues. *Emotion*, 8(3), 395.
- Huang, L., Joshi, P. D., Wakslak, C. J., & Wu, A. (2021). Sizing Up Entrepreneurial Potential: Gender Differences in Communication and Investor Perceptions of Long-Term Growth and Scalability. *Academy of Management Journal*, 64, 716–740.
- Humphreys, A., & Wang, R. J. H. (2018). Automated text analysis for consumer research. *Journal of Consumer Research*, 44(6), 1274–1306.
- Ibarra, H., Carter, N. M., & Silva, C. (2010). Why men still get more promotions than women. *Harvard Business Review*, 88(9), 80–85.
- Judge, T. A., & Cable, D. M. (2004). The effect of physical height on workplace success and income: Preliminary test of a theoretical model. *Journal of Applied Psychology*, 89(3), 428.
- Kaye, L. K., Malone, S. A., & Wall, H. J. (2017). Emojis: Insights, affordances, and possibilities for psychological science. *Trends in Cognitive Sciences*, 21(2), 66–68.
- Kanwisher, N., McDermott, J., & Chun, M. M. (1997). The fusiform face area: A module in human extrastriate cortex specialized for face perception. *Journal of Neuroscience*, 17(11), 4302–4311.
- Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, 110(2), 265.

- Keltner, D., Van Kleef, G. A., Chen, S., & Kraus, M. W. (2008). A reciprocal influence model of social power: Emerging principles and lines of inquiry. *Advances in Experimental Social Psychology*, 40, 151–192.
- Kensinger, E. A., & Schacter, D. L. (2006). Processing emotional pictures and words: Effects of valence and arousal. *Cognitive, Affective, & Behavioral Neuroscience*, 6(2), 110–126.
- Kilduff, G. J., & Galinsky, A. D. (2013). From the ephemeral to the enduring: How approach-oriented mindsets lead to greater status. *Journal of Personality and Social Psychology*, 105(5), 816.
- Koski, J. E., Xie, H., & Olson, I. R. (2015). Understanding social hierarchies: The neural and psychological foundations of status perception. *Social Neuroscience*, 10(5), 527–550.
- Kronrod, A., & Danziger, S. (2013). “Wii will rock you!” The use and effect of figurative language in consumer reviews of hedonic and utilitarian consumption. *Journal of Consumer Research*, 40, 726–739.
- Lammers, J., Galinsky, A. D., Gordijn, E. H., & Otten, S. (2012). Power increases social distance. *Social Psychological and Personality Science*, 3(3), 282–290.
- Lee, F., & Tiedens, L. Z. (2001). 2. Is it lonely at the top?: The independence and interdependence of power holders. *Research in Organizational Behavior*, 23, 43–91.
- Magee, J. C. (2009). Seeing power in action: The roles of deliberation, implementation, and action in inferences of power. *Journal of Experimental Social Psychology*, 45(1), 1–14.
- Magee, J. C. (2020). Power and social distance. *Current Opinion in Psychology*, 33, 33–37.
- Magee, J. C., & Galinsky, A. D. (2008). Social hierarchy: The self-reinforcing nature of power and status. *Academy of Management Annals*, 2(1), 351–398.
- Magee, J. C., Milliken, F. J., & Lurie, A. R. (2010). Power differences in the construal of a crisis: The immediate aftermath of September 11, 2001. *Personality and Social Psychology Bulletin*, 36(3), 354–370.
- Magee, J. C., & Smith, P. K. (2013). The social distance theory of power. *Personality and Social Psychology Review*, 17(2), 158–186.
- Mathews, A., Ridgeway, V., & Holmes, E. A. (2013). Feels like the real thing: Imagery is both more realistic and emotional than verbal thought. *Cognition & Emotion*, 27(2), 217–229.
- Mayew, W. J., Parsons, C. A., & Venkatachalam, M. (2013). Voice pitch and the labor market success of male chief executive officers. *Evolution and Human Behavior*, 34, 243–248.
- McClelland, D. C. (1985). How motives, skills, and values determine what people do. *American Psychologist*, 40, 812–825.
- Meyvis, T., & Van Osselaer, S. M. (2018). Increasing the power of your study by increasing the effect size. *Journal of Consumer Research*, 44(5), 1157–1173.
- Oleszkiewicz, A., Karwowski, M., Pisanski, K., Sorokowski, P., Sobrado, B., & Sorokowska, A. (2017). Who uses emoticons? Data from 86 702 Facebook users. *Personality and Individual Differences*, 119, 289–295.
- Ohala, J. J. (1994). The frequency codes underlies the sound symbolic use of voice pitch. In L. Hinton, J. Nichols, & J. J. Ohala (Eds.), *Sound symbolism* (pp. 325–347). Cambridge: Cambridge University Press.
- Paivio, A. (1991). Dual coding theory: Retrospect and current status. *Canadian Journal of Psychology/Revue Canadienne de Psychologie*, 45(3), 255.
- Palmeira, M. (2015). Abstract language signals power, but also lack of action orientation. *Journal of Experimental Social Psychology*, 61, 59–63.
- Peirce, C. S. (1902). *Logic as semiotic: The theory of signs*.
- Piacentini, M., & Mailer, G. (2004). Symbolic consumption in teenagers' clothing choices. *Journal of Consumer Behaviour: An International Research Review*, 3(3), 251–262.
- Pinker, S. (2003). Language as an adaptation to the cognitive niche. *Studies in the Evolution of Language*, 3, 16–37.
- Provine, R. R., Spencer, R. J., & Mandell, D. L. (2007). Emotional expression online: Emoticons punctuate website text messages. *Journal of Language and Social Psychology*, 26(3), 299–307.
- Puts, D. A., Hodges, C. R., Cardenas, R. A., & Gaulin, S. J. C. (2007). Men's voices as dominance signals: Vocal fundamental and formant frequencies influence dominance attributions among men. *Evolution and Human Behavior*, 28, 340–344.
- Reber, A. S. (1989). Implicit learning and tacit knowledge. *Journal of Experimental Psychology: General*, 118(3), 219.
- Reyt, J. N., Wiesenfeld, B. M., & Trope, Y. (2016). Big picture is better: The social implications of construal level for advice taking. *Organizational Behavior and Human Decision Processes*, 135, 22–31.
- Ridgeway, C. L., Berger, J., & Smith, L. (1985). Nonverbal cues and status: An expectation states approach. *American Journal of Sociology*, 90(5), 955–978.
- Riordan, M. A., & Glikson, E. (2020). On the hazards of the technology age: How using emojis affects perceptions of leaders. *International Journal of Business Communication*.
- Rim, S., Amit, E., Fujita, K., Trope, Y., Halbeisen, G., & Algom, D. (2015). How words transcend and pictures immerse: On the association between medium and level of construal. *Social Psychological and Personality Science*, 6(2), 123–130.
- Rosch, E., Mervis, C. B., Gray, W. D., Johnson, D. M., & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology*, 8(3), 382–439.
- Rosenfeld, L. B., & Plax, T. G. (1977). Clothing as communication. *Journal of Communication*, 27(2), 24–31.
- Schaerer, M., Swaab, R. I., & Galinsky, A. D. (2015). Anchors weigh more than power: Why absolute powerlessness liberates negotiators to achieve better outcomes. *Psychological Science*, 26(2), 170–181.
- Sereno, M. I., Dale, A. M., Reppas, J. B., Kwong, K. K., Belliveau, J. W., Brady, T. J., et al. (1995). Borders of multiple visual areas in humans revealed by functional magnetic resonance imaging. *Science*, 268(5212), 889–893.
- Skovholt, K., Grønning, A., & Kankaanranta, A. (2014). The communicative functions of emoticons in workplace e-mails. *Journal of Computer-Mediated Communication*, 19(4), 780–797.
- Smith, P. K., & Galinsky, A. D. (2010). The nonconscious nature of power: Cues and consequences. *Social and Personality Psychology Compass*, 4(10), 918–938.
- Smith, P. K., & Hofmann, W. (2016). Power in everyday life. *Proceedings of the National Academy of Sciences*, 113, 10043–10048.
- Smith, P. K., & Magee, J. C. (2015). The interpersonal nature of power and status. *Current Opinion in Behavioral Sciences*, 3, 152–156.
- Smith, P. K., Smallman, R., & Rucker, D. D. (2016). Power and categorization: Power increases the number and abstractness of categories. *Social Psychological and Personality Science*, 7(3), 281–289.
- Smith, P. K., & Trope, Y. (2006). You focus on the forest when you're in charge of the trees: Power priming and abstract information processing. *Journal of Personality and Social Psychology*, 90(4), 578.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89, 845–851.
- Stamkou, E., Homan, A. C., & Van Kleef, G. A. (2020). Climbing the ladder or falling from grace? A threat-opportunity framework of the effects of norm violations on social rank. *Current Opinion in Psychology*, 33, 74–79.
- Stephan, E., Liberman, N., & Trope, Y. (2010). Politeness and psychological distance: A construal level perspective. *Journal of Personality and Social Psychology*, 98(2), 268.
- Suddendorf, T., & Corballis, M. C. (2010). Behavioural evidence for mental time travel in nonhuman animals. *Behavioural Brain Research*, 215(2), 292–298.
- Thibaut, J. W., & Kelley, H. H. (1959). Power and dependence. In J. W. Thibaut, & H. H. Kelley (Eds.), *The social psychology of groups* (pp. 100–125). New York, NY: Wiley.
- Tiedens, L. Z., & Fragale, A. R. (2003). Power moves: Complementarity in dominant and submissive nonverbal behavior. *Journal of Personality and Social Psychology*, 84, 558–568.
- Tolins, J., & Samermit, P. (2016). GIFs as embodied enactments in text-mediated conversation. *Research on Language and Social Interaction*, 49(2), 75–91.
- Torrez, B., Waksak, C., & Amit, E. (2019). Dynamic distance: Use of visual and verbal means of communication as social signals. *Journal of Experimental Social Psychology*, 85, Article 103849.
- Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology*, 57(4), 660.
- Van Kleef, G. A., & Cheng, J. T. (2020). Power, status, and hierarchy: Current trends and future challenges. *Current Opinion Psychology*, 33, iv–xiii.
- Van Kleef, G. A., Homan, A. C., Finkenauer, C., Gündemir, S., & Stamkou, E. (2011). Breaking the rules to rise to power: How norm violators gain power in the eyes of others. *Social Psychological and Personality Science*, 2(5), 500–507.
- Wagner, R. K., & Sternberg, R. J. (1985). Practical intelligence in real-world pursuits: The role of tacit knowledge. *Journal of Personality and Social Psychology*, 49(2), 436–458.
- Wakslak, C. J., Smith, P. K., & Han, A. (2014). Using abstract language signals power. *Journal of Personality and Social Psychology*, 107(1), 41.
- Waytz, A., Chou, E. Y., Magee, J. C., & Galinsky, A. D. (2015). Not so lonely at the top: The relationship between power and loneliness. *Organizational Behavior and Human Decision Processes*, 130, 69–78.
- Winter, D. G. (1988). The power motive in women—and men. *Journal of Personality and Social Psychology*, 54, 510–519.
- Zitek, E. M., & Tiedens, L. Z. (2012). The fluency of social hierarchy: The ease with which hierarchical relationships are seen, remembered, learned, and liked. *Journal of Personality and Social Psychology*, 102(1), 98.