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The anticipatory effect of nonverbal communication

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HIGHLIGHTS

- We study the anticipatory effect of nonverbal communication on generosity.
- In a dictator game the dictator splits a sum of money with a recipient.
- The recipient expresses approval and disapproval via emoticons.
- Anticipation of emoticons discourages selfish behavior by dictators.
- The observed effect is weaker than anticipation of a verbal response.

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ABSTRACT

Is nonverbal communication capable of affecting economic outcomes? We study the effect of anticipated approval and disapproval, expressed through emoticons, on generosity and show that it discourages selfish behavior. In our experiment subjects play a one-shot dictator game at the end of which the recipient can respond to the allocation by drawing an emoticon and sending it back to the dictator. While the observed effect of nonverbal communication is somewhat weaker than the anticipation of a verbal response, our results provide evidence that people are willing to trade-off pecuniary gains to avoid disapproval or seek approval of their peers and that the sheer anticipation of receiving a response, even nonverbal, is sufficient to change their behavior.

1. Introduction

Is nonverbal communication capable of affecting economic outcomes? Anecdotal evidence suggests it might be, as power companies in the US have incorporated nonverbal feedback into approaches to reduce household power consumption and conserve energy (Stern, 2013). In the UK, regional councils implemented speed signs displaying a smiling face when people are driving at or below the speed limit and a frowning face when they are speeding. The signs were able to decrease the number of drivers exceeding the speed limit by 53% (Sadler, 2009). Yet little is known about the mechanisms through which nonverbal communication influences decisions as in everyday life it is often combined with verbal expressions of, say, encouragement or expectations. In this paper we focus on one such mechanism and ask whether nonverbal cues are sufficient means of expressing approval and disapproval and whether this effect is anticipatory and deters selfish behavior.

The use of wordless signals and cues such as facial expression, body posture, or eye contact play a prominent role in communication. Burgoon et al. (1996) estimate that almost two-thirds of the meaning of a social encounter is derived from nonverbal cues. The introduction of internet and mobile devices has resulted in new ways of how individuals and businesses communicate, with the face-to-face communication or phone calls being replaced by emails, texts, and messages via social networks. An important fac-

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tor lacking from messages transcribed into text and transferred online is the nonverbal component; without being able to see the facial expression it is often hard to convey the meaning and the tone. As a result the recipient of such messages might perceive them in ways the sender did not intend. This deficiency led to an introduction of *emoticons*, which are pictorial representations of human emotions, in online communication.[1] It is 'smiley' and 'frowning' face emoticons that power companies use to nudge people to conserve energy and regional councils to slow down speeding drivers, through creating anticipatory approval and disapproval effects.

To the best of our knowledge, there are no economic studies exploring the impact of nonverbal cues, despite their prominence in communication. The vast majority of existing studies on the effects of communication on economic decisions deal with either free-form or stylized messages (see Crawford, 1998 for a survey). This research shows that messages are, for example, capable of increasing cooperation (Charness and Dufwenberg, 2006), coordination (Cooper et al., 1992; Blume and Ortmann, 2007), enforcing social norms and preventing opportunistic behavior through informal non-monetary sanctions (Masclet et al., 2003; Rege and Telle, 2004).

Two important papers studying the effects of *anticipated communication*, Ellingsen and Johannesson (2008) and Xiao and Houser (2009), show that anticipated verbal messages expressing emotions and approval/disapproval promote fair behavior by allowing recipients in a one-shot dictator game to send a message to their paired dictator after they have learned about the allocation. Both experiments identify the crucial roles of approval seeking and disapproval avoidance in norm enforcement, which have been confounded with reactions to informal sanctions in repeated game experiments. However, the effect of nonverbal communication cannot be inferred from the effect of messages in either of these two experiments. While messages certainly add some element of emotional expression, the emotion conveyed by the nonverbal component of communication is lacking. Xiao and Houser interpret the increase in observed generosity of dictators as an avoidance of the 'sharp-tongue', yet this could have been an avoidance of disapproval (or confronting recipients' negative emotions) in general. If this is the case, then the anticipation of a disapproving nonverbal cue may be enough to deter people from acting in a selfish manner. To test this conjecture, we modify the design used in the two above-mentioned studies and allow the recipients to respond to the allocation by drawing emoticons and sending them to the dictators. Our contribution to this literature is thus twofold: (i) we establish whether *anticipated nonverbal communication* influences economic decisions; and (ii) compare the anticipatory effect of verbal and nonverbal communication on deterring selfish behavior.

2. Experimental design and procedures

The experiment consists of three conditions, *Baseline*, *Emoticon*, *and Message*, implemented in an across-subject design. The *Baseline* condition is a standard dictator game in which the randomly assigned dictator is endowed with \$10 and the recipient with \$0. The dictator can send any whole dollar amount between \$0 and \$10 to the randomly paired recipient. The recipient has no decision to make, thus the final allocation is entirely decided by the dictator.

The *Emoticon* condition is the same as Baseline except for an added stage at the end of the dictator game, where the recipient is given the opportunity to respond to the dictator's decision. After the decision is revealed to the recipient, the recipient can draw an emoticon and send it to the dictator. All stages are announced before the game begins, thus the dictator knows that the recipient can respond to her decision prior to deciding on an amount to be sent to the recipient. For comparability reasons with free-form-messages, the recipient is free to draw any emoticon, rather than selecting from a list of available emoticons. The drawing form for this stage includes an empty circle into which the recipient can draw an emoticon.

The *Message* condition is the same as Baseline except for an added stage where the recipient is given the opportunity to respond to the dictator's decision using a freeform written message. This is a replication of Ellingsen and Johannesson (2008) and Xiao and Houser (2009) that allows us to compare the effects of nonverbal communication with verbal. Just as in the Emoticon condition, all stages are announced before the game begins. The message form includes a blank sheet of paper with lines into which the recipient can write a message.[2]

Our experimental design yields the following three testable hypotheses regarding the amount sent by dictators to their paired recipient:

H1: Emoticon > Baseline
H2: Message > Baseline
H3: Emoticon = Message.

The experiment was conducted in the New Zealand Experimental Economics Laboratory at the University of Canterbury, with 188 undergraduate students serving as subjects. The participants were selected randomly from the database using ORSEE (Greiner, 2015). An experimental session lasted 25 min on average, including the initial instruction period and the private payment of subjects. The subjects earned an average of 10 New Zealand Dollars (NZD) including a NZD 5 show up fee. All sessions were run under a single-blind protocol, in which there was full anonymity between subjects, however the experimenter could track subjects' decisions and identities.

Table 1
Subject behavior.

	Baseline ($n = 30$)	Emoticon ($n = 32$)	Message ($n = 32$)
Average amount sent	2.67 [2.15]	3.44 [1.93]	4.09 [2.37]
Median amount sent	3	4	5
Frequency of positive amount sent	70% {21}	84.4% {27}	84.4% {27}
Average positive amount sent	3.81	4.07	4.85
Frequency of emoticons sent	–	100% {32}	–
Frequency of messages sent	–	–	100% {32}

Standard deviations in brackets. Number of dictators in braces.

3. Results

Table 1 summarizes subject behavior and Fig. 1 shows the distribution of amounts sent by dictators in our three conditions. The statistical tests are presented in Table 2.

[1] Their increased use culminated in 2014 when the word of the year was not actually a word but the red love heart emoticon (The Washington Post, 2014).

[2] The goal of the current experiment is not to identify the incremental effect of nonverbal communication in a situation where a person can use both messages and nonverbal cues. Design exploring such question would include both a message form and an emoticon form and explicitly mention this in the instructions. We are interested in comparing the effects of 'pure' verbal communication with nonverbal. This is not to say that no emoticons were drawn on message forms; in fact there were 12/32 recipients who used an emoticon, however, the instructions emphasized that the recipients would write messages, which is what arguably drove the anticipation of dictators.