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It takes time (not money) to understand:

Money reduces attentiveness to common ground in communication.

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Abstract

Communication is a central part of social life. Successful communication requires going beyond the semantic meaning of words by being attentive to the interaction's common ground, that is, considering what actors know and believe to be mutually known about the situation. Drawing on previous literature suggesting that thoughts about money reduce social interaction whereas thoughts about time increase it, we propose that thinking about money compared to time reduces attentiveness towards the common ground. In support of this, we find that individuals who had been thinking about money compared to time were less likely to interpret two similar questions as distinct, even though asking the same question twice would be violating conversational norms (Study 1). Moreover, they were less likely to note ambiguity in a euphemistic description (Study 2), thus illustrating that lower attentiveness to the interaction's common ground can be a double-edged sword.

Keywords: money, time, language, conversational logic, Grice

Introduction

Both time and money are resources that most people wish they had more of. Consequently, time and money often dominate our thoughts. How do these thoughts affect people? Recent research suggests that thinking about money reduces the desire and the likelihood to engage with others (Vohs, 2015; Vohs, Mead, & Goode, 2008, 2006), whereas thinking about time has the opposite effect (Mogilner, 2010; Mogilner & Aaker, 2009). In other words, money compared to time reduces the *quantity* of interpersonal communication. Interestingly, however, little is known about how money and time influence the *quality* of communication, that is to say, how well speakers and listeners understand and respond to each other. An essential requirement for understanding and successfully responding to communication is to consider what actors know and believe to be mutually known about the social situation, which is referred to as "common ground" (Clark, 1985; Clark & Marshall, 1981). Taking common ground into account is important to disambiguate semantic content. To illustrate, the question "where do you live" will require a different answer depending on whether it is asked at a friend's party or during a trip abroad. Hence, beyond what is actually said in terms of semantics, taking common ground into account helps to understand what is actually meant (pragmatic understanding). Here we test the hypothesis that people who have been thinking about money compared to time are less attentive to the common ground, and, as a result, are less likely to pick up on conversational subtleties. In what follows, we first provide the conversational background before delineating this specific hypothesis.

Semantics and pragmatics of communication

In today's interconnected world the understanding of language and the ability to successfully communicate has perhaps become more essential than ever. Sometimes communication is clear-cut and messages are unambiguous. Often, however, language is full of subtleties that require the recipient to go beyond the information given. As a result, a mere

semantic understanding is often not sufficient. Instead a pragmatic interpretation is required to infer what the speaker actually means (Clark, 1985).

In order to understand pragmatic meaning, people follow a tacit set of conversational norms or maxims (Grice, 1975). This means that information is normally expected to be truthful (maxim of quality), complete but not redundant (maxim of quantity), relevant (maxim of relation), and concise (maxim of manner). However, these assumptions have to be interpreted with conversational context in mind (Wänke, 2007; Wänke & Reutner, 2009). What is the situation? What do I know about the other people involved? What do they know about me? This common ground, is the foundation upon which communication is built (Clark & Marshall, 1981). To illustrate, consider the following example: When asked, "how has your week been," a person may focus on recounting successful meetings or stomach problems, depending on whether the boss or the doctor is asking the question. Though taking common ground into account can be relatively easy, it requires a minimum of attentiveness to the social situation.

What makes people more or less attentive to the common ground? One vital ingredient is being able to take the perspective of the other party in a conversation (Clark & Marshall, 1981; Clark & Murphy, 1982; Keysar, Barr, Balin, & Brauner, 2000). Someone who can put her- or himself in the shoes of their conversation partner is more likely to take that partner's situation, knowledge, and intentions into account, thereby attending to the common ground. Notably, there can be systematic variations in perspective taking between groups of people. For instance, perspective taking is more likely in people from collectivistic cultures where self-concepts are defined in terms of relationships compared to people from individualistic cultures where the self is often seen as separate from others (Wu & Keysar, 2007). People from collectivistic cultures are also more likely to process information in a more holistic and relational manner, taking context into account. In contrast, individuals from individualistic cultures have a general tendency for more analytical and abstract processing, which is less

sensitive to contextual information (Choi, Koo, & Jong An Choi, 2007). In this vein, research has shown that individuals from collectivistic cultures are more attentive towards common ground when interpreting information compared to people from individualistic cultures (Haberstroh, Oyserman, Schwarz, Kühnen, & Ji, 2002). Put more simply, in societies where social relationships are essential, so is the need to understand communication.

Interestingly, "culture" can also be situationally induced (Oyserman, 2011; Oyserman & Lee, 2008), by activating self-related concepts of inter- or independence. Consequently, people for whom an interdependent self had been activated by circling first person plural pronouns "we", "us", "ourselves" in a text were more sensitive to conversational norms compared to people for whom the self in a social context had been activated by circling first person singular pronouns such as "I", "me", "myself" (Haberstroh et al., 2002). More concretely, interdependents were more likely to distinguish between two very similar questions ("how happy are you with your life?" and "how satisfied are you with your life?") than independents. Presumably this is because they were more attentive to the common ground ("they already know that I am happy with my life") and inferred that the second question must refer to something distinct from happiness—otherwise it would be redundant to ask or answer (maxim of quantity; Grice, 1975).

Time and money

How could thoughts about time and money influence attentiveness to the common ground? Although both are highly desirable resources, time and money are associated with vastly different things. Money as a resource is linked to status, power, and independence, whereas time as a resource is linked to leisure, good times, and socializing (Gino & Mogilner, 2014; Mogilner, 2010; Mogilner & Aaker, 2009). Presumably this is because money can be accumulated thereby increasing status, power, and independence, whereas time is a resource that can not be accumulated. Instead it inevitably runs out over the course of a life. This

might lead individuals to want to spend this fleeting resource in a way that makes them most happy – with friends and family (Mogilner, 2010).

That these associations with the concepts of time and money have powerful consequences has been demonstrated in several studies in recent years (Gino & Mogilner, 2014; Mogilner, 2010; for a review see, Vohs, 2015). It has been shown that merely thinking about money increases focus on the self (Reutner & Wänke, 2013) and leads to more self-sufficient and independent behavior (Vohs et al., 2006). Money is linked to distance (Hansen, Kutzner, & Wänke, 2013), coldness (Reutner, Hansen, & Greifeneder, 2015), a lack of empathy (Ma-Kellams & Blascovich, 2013), and a decrease in ethical behavior (Gino & Pierce, 2009). People who have thought about money actively disengage themselves from others by spending less time with other people and more time on their own (Mogilner, 2010; Vohs et al., 2006). Thinking about time on the other hand has somewhat opposite effects. People who have thought about time spend more time socializing (Mogilner, 2010) and show a decrease in self-serving and unethical behavior compared to people who had been thinking of control concepts or money (Gino & Mogilner, 2014).

In sum, thinking about money leads to a focus on the self as an independent individual and reduces interest in others whereas thinking about time leads to a focus on the self as an interdependent individual and increases interest in others. Combining these findings with the findings that a focus on independence, compared to a focus on interdependence, decreases attentiveness to the common ground in communication exchanges, we propose that activating thoughts about money, compared to thoughts about time, will lead to less attentiveness towards the common ground.

Overview of the present studies

We conducted two studies to test our prediction that activating thoughts about money leads to less attentiveness to the common ground than activating thoughts about time. In the first study we adapted a paradigm originally employed by Strack, Schwarz, and Wänke

(1991). This paradigm has been shown to be sensitive to situational manipulations of the self as independent or interdependent individual (Haberstroh et al., 2002). In this paradigm participants are asked two highly similar questions about their lives, one about happiness and one about satisfaction. The idea is that, although individuals would normally not distinguish between the two concepts, the fact that both questions are asked indicates that separate concepts are assessed—or why else would a researcher ask two questions (maxim of quantity)? Whether participants distinguish between the two questions can be assessed by analyzing the correlation between the two: a high correlation presumably indicates that participants perceived the two questions as assessing the same concept, whereas a lower correlation presumably indicates that participants build on common ground and thus assumed that the researcher asked about different things (Schwarz, 1999; Schwarz & Oyserman, 2001; Strack et al., 1991). Against the background of our theoretical account, we thus hypothesized a lower correlation for time compared to money participants.

In Study 2, we aimed to show generalizability across paradigms and domains. In Study 1 the speaker's intention was to gather information, whereas in Study 2 he or she wishes to persuade. In a persuasion context the speakers need to be convincing, despite the fact that not all available information may be supportive of one's account. To the extent that lying is not an option (e.g., because it may be legally prosecuted, such as in the domain of advertising), persuaders may revert to techniques such as relying on euphemisms, that is, framing potential flaws as benefits. To illustrate, consider a dog shelter advertisement that describes a dog that is difficult to handle and is disobedient as having a "strong character." To pick-up on these subtleties requires taking common ground (here: a persuasive context) into account. We therefore hypothesized that money participants would be less likely to pick-up on the negative meaning of a seemingly positive persuasive statement compared to time participants.

In these studies, we report all measures, manipulations and exclusions. All data is available upon request and retained for a minimum of five years after publication.

Study 1

In Study 1 we tested the hypothesis that time-participants compared to money-participants would distinguish more between two highly similar questions because they take common ground into account (why would a researcher ask the same thing twice?). To this end, we first asked participants how happy they were with their lives and, second, how satisfied they were with it. We hypothesized that the correlation between the two questions would be lower for time-participants. Because no explicit information with regard to the relationship between the two questions was provided, we refer to this condition as a low salience condition. To illustrate that distinguishing between the two questions (the hypothesized psychological process) indeed results in a lower correlation between the two questions, we further included a high salience condition in which we explicitly told participants that we wanted to know two different things about their lives (adapted from Strack et al., 1991).

Method

Participants and Design.

Unbeknownst of the effect size in our setting, we decided to recruit a similar amount of participants as was recruited in the original study (Haberstroh and colleagues, 2002, Study 1, $N = 69$) that our study is based on. Data collection was carried out in an introductory psychology class. Seventy-one participants (62, females, 9 males, $M_{age\_in\_years} = 21.72$, $SD = 3.23$) agreed to participate in a short survey after class, so that the stopping rule was reached within one session. Participants were randomly assigned to the money or time condition with either low or high common ground salience. No participants were excluded from analyses.

Materials and Procedure.

Participants were given a questionnaire. The first part of the questionnaire contained the priming in the form of a scrambled sentence task adapted from Mogilner (2010). Within the task participants were provided a string of four words and were asked to circle three to

form a sentence. In the money condition many of the word strings contained words related to money (e.g., money we have it) whereas in the time condition many of the word strings contained words related to time (e.g., time we have it). After completing the scrambled sentence task, participants were asked to provide some information about themselves. The *low salience* condition was told that we first wanted to have some information relating to their life: how happy are you with your life (1 = not at all happy; 7 = very happy) and how satisfied are you with your life (1 = not at all satisfied; 7 = very satisfied). Participants in the *high salience* condition were told that we had a question about their life: how happy are you with your life (1 = not at all happy; 7 = very happy). After participants had answered that, the next line read: "and now we have another question: How satisfied are you with your life (1 = not at all satisfied; 7 = very satisfied). The two questions were thus marked as targeting different concepts, to which there are potentially different answers. Next, participants answered four filler questions regarding student life, such as how long their commute to university was or what their living situation was like. Finally, to pretest scales for an independent project, we asked participants for ratings on agency and communion items that were adapted from Abele and Uchronski (2008). These results are not reported here.

Results

First, we tested the hypothesis that money participants, compared to time participants, would be less sensitive to conversational norms and thus show a higher correlation between life satisfaction and happiness. We used a Fisher's z-transformation for correlation coefficients and tested for a difference between the two correlations following a procedure suggested by Cohen, Cohen, West, and Aiken (2003).

We observed that correlations in the low salience condition were higher than in the high salience condition, $r_{low\_salience}(36) = .92$ vs. $r_{high\_salience}(35) = .79$, $Z = 2.00$, $p = .048$. This indicated that we successfully manipulated salience of the common ground. Furthermore, as expected, money participants showed an overall higher correlation than time participants,

$r_{money}(36) = .92$ vs. $r_{time}(35) = .77$, $Z = 2.38$, $p = .018$, independent of salience. However, this effect was more pronounced in the low salience condition, $r_{money}(18) = .98$ vs. $r_{time}(18) = .85$, $Z = 3.07$, $p = .002$, than when there was a lead which made speakers' intention salient. In this high salience condition the difference no longer reached conventional levels of significance, $r_{money}(18) = .82$ vs. $r_{time}(17) = .67$, $Z = .92$, $p = .364$.

Discussion

Study 1 supports the assumption that individuals focus less on conversational norms and common ground when they had been thinking about money compared to time. Money participants were less sensitive to the maxim of quantity (e.g., "do not ask redundant questions") and thus distinguished less between two similar questions compared to time participants, especially when the distinctiveness of the questions had not been stressed beforehand and thus had to be inferred by the participants.

As we primed two concepts—money and time—known to shift individuals' priorities in life, we cannot fully exclude the possibility that happiness and satisfaction are indeed differently related to each other depending on whether money or time is on one's mind. However, if it were the case that the observed effects were solely due to differing relatedness of happiness and satisfaction and in no way due to differing attentiveness towards common ground, we should not have observed an effect of the salience manipulation. Nevertheless, we conducted a second study, in which we chose a less existential measure to attest to the generalizability of the effect.

Further, as we conducted the study in a classroom setting we had the chance to keep many sources of error variance constant by having all participants complete the study in the same setting at the same time. However, this came at the cost of a limited number of rather homogeneous participants. We address this in Study 2, too.

Study 2

The aim of Study 2 was to extend the findings of Study 1 with a larger and more diverse sample of participants and to move the setting to a different conversational context. In Study 2 we relied on the fact that people who are attentive towards conversational norms and the common ground draw inferences that go beyond the information given (Wänke, 2007; Wänke & Reutner, 2009). Although positive as well as negative inferences may be drawn from a given description, it arguably takes more attention to the common ground to infer seemingly negative information from a superficially positive description. Yet precisely this may be needed to successfully decode euphemistic descriptions in persuasion contexts. Indeed, though persuaders are limited by having to adhere to truth to a certain extent, they are free in turning weaknesses into strengths. To illustrate, even though a real estate agent cannot call a small apartment large, he might refer to it as "cozy." Similarly, a car dealer might describe an inelegant model as "sturdy," and a restaurant critic who wishes to sound positive might describe a dish that most people dislike as "an acquired taste." Following this logic, an animal shelter might have an easier time rehoming a dog that they describe as "strong willed" rather than "difficult to handle," or "protective" rather than "aggressive," even though the negative trait is implied in the positive trait. To properly interpret the underlying meaning of these, at first glance, completely positive descriptions, the listener needs to be attentive to the common ground (e.g., what he or she knows about the speaker's motives) and go beyond the information given to make an inference about what benefits but also limitations might be associated with the description. As money participants should be less likely to go beyond the information given, we hypothesized that money participants compared to time participants would be less likely to infer associated traits—especially when they are negative—from a description and would thus be less discerning, that is, show a smaller difference in their assessment between positive and negative traits.

Method

Pretest

We pretested a description of a dog that had been designed to contain a description from which positive but also negative traits could be inferred. We preset a sample size of N = 40 of German-speaking participants and stopped data collection as soon as this number had been reached. Participants (25 males, 14 females, and 1 undisclosed; $M_{age\_in\_years}$ = 32.92, SD = 9.88), were recruited on Clickworker – the platform we subsequently used for the main study. The participants were presented with the following description of a dog advertised by a dog shelter (translated from German):

"Vasco is a handsome, spirited, and self-assured, Spanish crossbreed. He is a dog with character, a companion, with a strong protective instinct that will make you feel safe. Vasco is castrated, chipped, and vaccinated." Participants rated the dog's character on several semantic differentials (7 point scales). The pretest revealed that participants made the positive inferences that the dog was playful, $t(39) = 10.22$, $p < .001$, d = 3.30 , and devoted to his master, $t(39) = 6.17$, $p < .001$, d = 2.00 , but also made the negative inferences that the dog was not obedient, $t(39) = -2.77$, $p = .009$, d = .89 , not easy to handle, $t(39) = -7.18$, $p < .001$, d = 2.30, and not mild-tempered, $t(39) = 5.05$, $p < .001$, d = 1.62 (tested against the scale mid-point). We thus used the dimensions "playful," "devoted," "obedient," "easy to handle," and "mild-tempered" in Study 2.

Participants and Design.

Study 2 tested a new paradigm that had not been used in previous studies. Unbeknownst of the effect size, we decided to recruit enough participants to detect a small interaction effect in a between-within repeated measures design (f = .10). Using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), we calculated that a sample size of 200 participants would be required given a power of .80 and an assumed correlation of .5 between repeated measures. We asked for 200 German-speaking participants from the online platform

Clickworker. Due to technical malfunction on the provider's part, we received responses from only 193 participants (107 male, 85 female, 1 undisclosed; $M_{age\_in\_years}$ = 36.70, *SD* = 11.33). No participants were excluded from analyses. Participants were randomly assigned to one of two conditions, money vs. time. The dependent variable was trait assessment of the dog "Vasco" following the pretested character description. As the description itself was positive, we expected money and time participants to rate the dog similarly on the positive traits. However, we expected the money participants to be less sensitive towards the negative meaning of positive sounding information resulting in a higher difference between positive and negative ratings in the time compared to money condition.

Materials and Procedure.

In a task adapted from Gino and Mogilner (2014) participants were first shown either a one-minute long video of someone piling up five and ten Euro notes (money condition) or piling up calendar sheets (time condition) and were asked to estimate the number of Euro bank notes vs. calendar sheets. As a second task they were then shown the pretested description of a dog that was advertised by a dog shelter (see Pretest). Although superficially positive, the description was ambiguous in the sense that the description left room for negative inferences as well: Although it could be inferred from the description that the dog was playful and devoted to its master (positive trait inferences), it could also be inferred that the dog was not very obedient, not very mild-tempered, and not very easy to handle (negative trait inferences). We assessed all these traits on 7-point scales ranging from 1 = not at all to 7 = very (e.g., 1 = not at all easy to handle, 7 = very easy to handle). Participants then gave their overall impression of the dog (from 1 = negative to 7 = positive). We did not have a hypothesis for this overall impression as this would depend on how the individual participants weigh certain characteristics. To illustrate, some people might find a strong willed animal threatening, whereas others might enjoy the challenge. As a potential control variable we also assessed prior experience with dogs (from 1 = no prior experience to 7 = vast prior

experience). After answering some demographic questions participants were thanked and dismissed.

Results

To test our hypothesis that money participants would be less discerning in their evaluation of the dog, we combined the judgments into two scores: inferred positive vs. inferred negative. We then entered these two inference scores into a repeated measures ANOVA, with money vs. time condition as a between participants factor. As hypothesized, we found a significant interaction between the inference scores and the condition, $F(1,191) = 5.68$, $p = .018$, $\eta^2_p = .03$. Planned contrasts revealed that time participants made positive and negative inferences, that is, they judged the dog to be playful and devoted to his master ($M = 4.90$, $SD = 1.12$), but also thought he was less obedient, not as easy to handle, and not very mild-tempered ($M = 4.55$, $SD = 1.42$) , $F(1, 191) = 7.21$, $p = .008$, $\eta^2_p = .04$. Money participants, in contrast, did not make discerning inferences, $M_{positive} = 4.82$, $SD = 1.16$ vs. $M_{negative} = 4.90$, $SD = 1.28$, $F(1,191) = .43$, $p = .51$, $\eta^2_p = .00$. Controlling for prior experience with dogs did not change the pattern or the significance of the results.

Discussion

Study 2 extended the findings of Study 1 by showing that money participants, compared to time participants, were less sensitive towards conversational context and the implications of a message. They gave less discerning evaluations of a dog following an ambiguous description that was on the one hand framed positively but also left space for negative inferences. We also further corroborated the findings from Study 1 by using a large sample to ensure high power, as well as a more diverse sample. Further, although it seemed the obvious first step to test our hypothesis with a well-established paradigm (Haberstroh et al., 2002; Strack et al., 1991), we wanted to move away from existential constructs like life happiness and satisfaction that might be construed differently depending on whether money or time thoughts are salient. Finally, by employing an advertisement description, Study 2 also

ruled out another potential alternative explanation for the findings of Study 1, namely that money participants do make inferences based on the conversational context but are simply less cooperative and do not care as much about giving helpful answers. Instead one could argue that money participants were being more helpful and cooperative towards the advertiser by being more susceptible to the persuasion effort. By neglecting common ground that advertisers sometimes go to great lengths to mask potential weaknesses as strengths, money participants, compared to time participants, missed out on important "hidden meaning" that would have to be pragmatically inferred.

General Discussion

People often wish they had more time and money. But how do these thoughts affect how people communicate? Considering that time is associated with social behavior and the desire to connect to others, whereas money is associated with autonomous behavior and the desire to distance oneself from others, time should also be linked to more attentiveness in communication as communication is certainly one of the most social aspects of life (Fiedler, 2008). The reverse should be true for money. Consistent with this reasoning, we show that money thoughts, compared to time thoughts, decrease attentiveness to the common ground in communication. More concretely, we found that individuals who had been thinking about money compared to time were less likely to interpret two similar questions as distinct, even though asking the same question twice would be violating conversational norms (Study 1). They were also less likely to note ambiguity in a seemingly positive description thus being more likely to rate a dog positively on traits that were actually negatively related to the given description (Study 2).

Although our studies do not involve process measures, we build our hypothesis on a solid literature foundation. Several studies attest to the fact that time and money differently affect the importance of social interaction (e.g., Aaker, Rudd, & Mogilner, 2011; Mogilner, 2010) of which communication is arguably one of the most defining factors (Fiedler, 2008).

Although relationships are central when time is activated, money has been shown to reduce the extent to which people define themselves by their social roles (Ma-Kellams & Blascovich, 2013), to divert attention away from others and towards the self as an autonomous individual (Vohs et al., 2008, 2006). Against this background it seems most plausible to assume that money would reduce attentiveness to the common ground in conversation, something that by definition requires attention to other people.

Theoretical contribution

The present research advances prior research on the psychological effects of time and money. Whereas prior research investigated how likely participants are to interact with people after having thought about money or time, suggesting that money reduces the *quantity* of interaction, we take this one step further and investigate the character of interactions, suggesting that money might also affect the *quality* of interactions. As people who have been reminded of money are less likely to be attentive to common ground, they are also less likely to be a helpful interaction partner. They also might be more prone to misunderstanding the communication. Interestingly, our results suggest that this might not only be to the detriment of their interaction partners but also to their own disadvantage. In Study 2 money participants missed out on important implications of the description. Had they indeed wanted to adopt a dog they might have been in for an unpleasant surprise. Euphemistically labeling small apartments as “cozy” and a noisy street as “a lively neighborhood” or aggressive dogs as “protective” might thus be more effective in persuading people who had been reminded of money.

Beyond advancing the literature on time and money, the present manuscript also contributes to understanding how language and communication can be subject to situational influences. Thoughts about time and money, arguably thoughts that cross people’s mind relatively often, can influence the extent to which people take common ground and conversational context into account. By showing that money, compared to time, reduces

attentiveness towards the common ground between speaker and listener, our research extends previous research that shows that independence, compared to interdependence, reduces attentiveness towards common ground (Haberstroh et al., 2002). Our results parallel these earlier findings as thinking of money leads to more independent attitudes and behavior (for a review, see Vohs, 2015) whereas time leads to more interdependent attitudes and behavior (Mogilner, 2010). A next step on how time and money might differently affect communication might be to investigate communication content. For example, as money fosters more independence, money might lead to more frequent use of singular personal pronouns like “I” and “me” whereas time fosters more interdependence and might thus lead to more frequent use of plural personal pronouns like “we” and “us”.

Conclusion

Money and time affect communication. Money, compared to time, reduces attentiveness towards the common ground of communication parties. Money induced impairment in understanding communication might disadvantage the sender when the goal of the communication was cooperative. On the other hand, it might disadvantage oneself when the communication is less cooperative, as money seems to decrease sensitivity to context in both instances.

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