UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Perspective-Taking in Referential Communication: Does Stimulated Attention to Addressee's Perspective Influence Speakers' Reference Production?

Permalink

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 39(0)

Authors

Damen, Debby
van der Wijst, Per
van Amelsvoort, Marije
et al.

Publication Date

2017

Peer reviewed

Perspective-Taking in Referential Communication: Does Stimulated Attention to Addressee's Perspective Influence Speakers' Reference Production?

Debby Damen (d.j.damen@uvt.nl), Per van der Wijst (per.vanderwijst@uvt.nl), Marije van Amelsvoort (m.a.a.vanamelsvoort@uvt.nl), Emiel Krahmer (e.j.krahmer@uvt.nl)
Tilburg center for Cognition and Communication, Tilburg University, PO Box 90153, 5000 LE, The Netherlands

Abstract

We investigated whether speakers' referential communication benefits from an explicit focus on addressees' perspective. Dyads took part in a referential communication game and were allocated to one of three experimental settings. Each of these settings elicited a different perspective mindset (none, self-focus, other-focus). In the two perspective settings, speakers were explicitly instructed to regard their addressee's (other-focus) or their own (self-focus) perspective before construing their referential message. Results indicated that eliciting speakers' self- versus other-focus did not influence their reference production. We did find that speakers with an elicited egocentric perspective reported a higher perspective-taking tendency than speakers in the other two settings. This tendency correlated with actual referring behavior during the game, indicating that speakers who reported a high perspective-taking tendency were less likely to make egocentric errors such as leaking information privileged to speakers themselves. These findings are explained using the objective self-awareness theory.

Keywords: perspective-taking; referential communication; egocentricity bias; privileged information.

Introduction

Engaging in successful referential communication implies that addressees are able to select the intended referent on the basis of speakers' descriptions. For this, speakers are expected to design their message optimally (i.e., audience design in Clark & Murphy, 1982), adhering to addressees' informational need (Clark, 1992). Speakers are supposed to exchange just the right amount of information, neither too little nor too much (Grice, 1975), and base their contributions on the knowledge, beliefs and assumptions that are shared or salient between themselves and their addressee (i.e., common-ground information). This is necessary, because addressees will rely on this shared, salient knowledge when interpreting the referential message (Arnold, Kaiser, Kahn, & Kim, 2013). Referential communication thus relies a great deal on interlocutors' ability to accurately engage in the process of perspective-taking; the ability to take into account the knowledge and attentional state of their interaction partner at each step in the conversation. The questions that arise here are whether interlocutors are inclined to regard the other's perspective accurately during interaction, and if this is not the case, whether a stimulated attention to another's perspective would be beneficial for the referential communication process.

The literature shows a puzzling picture with regard to speakers' ability and propensity to accurately regard addressee's perspective and, thus, to engage in an accurate audience design. On the one hand, studies evidenced that speakers succeed at assessing and adapting their communication to their addressees' knowledge (needs) (Heller, Gorman, & Tanenhaus, 2012; Nadig & Sedivy, 2002), whereas others have indicated that these adjustments are not always accurate (Horton & Keysar, 1996; Keysar, Barr, Balin, & Brauner, 2000). According to these latter studies, language production is not necessarily anchored to addressees' needs, but more to speakers' own knowledge and attentional state, resulting in utterances that are based on information immediately accessible to speakers themselves. Following this approach, addressee's knowledge is only considered in a later, optional stage in which speakers can consciously choose whether to adjust their language production to the common ground status (Horton & Keysar, 1996). Scholars defending the latter view argue for speakers' egocentricity bias (Keysar, Barr, & Horton, 1998), entailing that speakers use their own mental state as a representational default to infer the one of their addressee (Epley, Keysar, Van Boven, & Gilovich, 2004). Engaging in perspective-taking is then considered to be a cognitive effortful process that can result in egocentric anchor mistakes when speakers do not correct their automatic response. Research indicated that these errors are likely to occur in social interactions, as speakers sometimes refer to information not known to their addressee (Horton & Keysar, 1996), or even leak privileged information that should have stayed confidential (Kaland, Krahmer, & Swerts, 2014; Wardlow Lane, Groisman, & Ferreira, 2006).

In a referential communication task, Wardlow Lane et al. (2006) evidenced speakers' informational leakage even when it bore negative consequences. During the task, speakers described geometrical objects to their addressees, with the goal of earning both of them points if the addressee correctly identified the referent. Before every description, speakers hid one object from their addressee's view. This object always differed in size from the target object speakers had to describe. Addressees could earn additional points by correctly guessing the identity of the hidden object. Although speakers were instructed not to let their addressee gain additional points, results showed that speakers were likely to cue the identity of their privileged object by referring to the size contrast they themselves were seeing. This was especially the case when the target object and speakers' privileged object were similarly rather than differently shaped, as the size contrast presented to speakers was then most relevant (i.e., salient) for speakers to discern.

Subsequent studies replicated findings of Wardlow Lane et al. (2006) by showing that speakers also leak information

non-verbally (Kaland et al., 2014), and especially when they do not have enough cognitive resources left to correct perspective mistakes (Wardlow Lane & Ferreira, 2008). Intriguingly, speakers are even more likely to refer to privileged information when they are motivated to keep it confidential. The motivation to keep private information privileged further enhances its salience which, as a consequence, can result in it being revealed (Wardlow Lane & Liersch, 2012).

It seems that despite their efforts speakers are not always able to monitor for perspective mistakes or to adjust their egocentric errors to addressees' informational need. The question raised here is whether speakers' audience design would benefit from a constant reminder of interlocutor's informational need (i.e., perspective). Research has suggested that audience design is more likely to occur when speakers are made aware that such design is needed (Horton & Gerrig, 2002). We therefore suggest that guiding speakers through a perspective-taking process might inhibit egocentric anchoring, and might boost their monitoring for perspective mistakes. This might incite speakers to correct for egocentric errors such as the leakage of privileged information (Horton & Keysar, 1996), resulting in a references that are more accurately based on addressee's perspective, and less on speakers' own knowledge and attentional state.

Current Study

This study examines whether speakers' elicited attention to addressee's perspective influences their reference production. Following the assumptions of the egocentricity hypothesis (Keysar et al., 1998), we expect speakers in a baseline setting (i.e., in which perspectives are not induced) to automatically anchor their referential expressions to their private knowledge, increasing the likelihood they will refer to this information, compared to other-focused speakers whose attention is focused on their interlocutor's perspective. We further hypothesize that self-focused speakers who are made explicitly aware of their own perspective will be more likely to leak privileged information than speakers referring in the baseline setting.

Based on the findings of Wardlow Lane et al. (2006), we additionally expect that speakers will be more likely to leak privileged information when this information is salient versus non-salient to them. That is, if speakers refer to a common-ground figure (e.g., a circle) that has a size-contrasting match (e.g., a bigger circle) in their privileged ground, the size difference is relevant and, thus, salient to *speakers themselves* to discern. This in contrast to situations in which speakers are presented with a size-contrasting mismatch (e.g., a bigger triangle) in their privileged ground. The salience of the size contrast presented by matching rather than mismatching figures makes speakers more likely to add contrasting adjectives in their description of the target figure (e.g., "the *small* circle"), by which they leak privileged information. Finally, we expect that the salience of privileged information will interact with the induced perspective. Self-focused speakers are expected to be more likely to leak information

when it is salient versus non-salient, compared to the baseline setting. Since other-focused speakers explicitly focus on addressee's perspective, we expect these speakers to be less influenced by the salience of their private information, compared to the baseline setting.

Method

Participants

In total, 93 student-dyads ($N = 186$) participated in this study. The data of three dyads were excluded from analyses, due to an error in the experimental procedure ($N = 2$), or due to a low proficiency in the language of the experiment (Dutch) ($N = 4$). The analyses were based on 90 dyads in which the participants were randomly assigned either the role of the speaker (55 women, 35 men, $M_{age} = 22.0$ years; age range 18-34 years) or the role of the addressee (59 women, 31 men, $M_{age} = 21.3$ years; age range 17-27 years). All participants were fluent in Dutch, did not experience problems at discerning the colors used in the study, and received a small remuneration for their participation.

Design

The experimental design and procedure were replicated from Kaland et al. (2014), which in turn were inspired by Wardlow Lane et al. (2006). The experiment consisted of a referential communication task in which speakers were asked to describe mutually visible geometrical figures in such a way that the addressee could indicate the intended one out of a set of four. These four figures were physically presented on the table in between both interlocutors, and depicted on speakers' private computer screen. From their private computer screen, speakers were instructed to block one figure and, subsequently, to identify another figure on the table in front of them (figure 1). The occluded figure differed either in size or color from the three mutually visible figures. In our experiment, we replicated Kaland et al. (2014) privileged situation and added a perspective-taking manipulation. In this privileged setting, one object was always blocked from addressee's view and thus belonged to speaker's privileged ground.
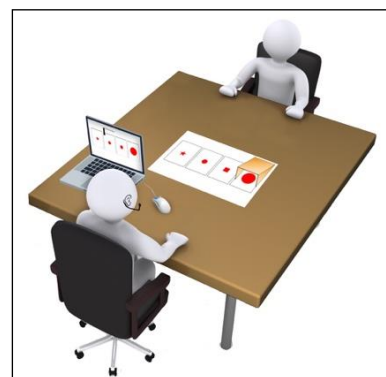

Figure 1: The experimental setting in which the speaker (on the bottom) identified figures to the addressee (on the top).

Materials

Eliciting Self- Versus Other-Focus Speakers' self- versus other-focus was manipulated by asking them explicitly to either regard their own (self-focus) or their addressee's (other-focus) perspective before they identified the target object. Participants were randomly assigned to one of the three communication settings (self-focus, other-focus, baseline), resulting in 30 speakers per setting. The self-versus other-focus was operationalized by asking speakers to answer a perspective question portrayed on the computer screen next to them. In the self-focus setting, speakers answered the question reinforcing their egocentric perspective: *"Which four figures are visible to you?"*. This in contrast to the speakers in the other-focus setting who were asked to regard the perspective of their addressee: *"Which three figures are visible to your addressee?"*. Speakers answered the question by selecting the figures on their private computer screen. To eliminate the possibility that the self-focused speakers would simply select all figures as a response to the question, a fifth figure was added to the figures presented on the computer screen.

To investigate the influence of our perspective manipulation, we allocated one third of the speakers to a baseline setting. In this setting, we did not reinforce speakers' self- versus other-focus. In this way, we were able to examine how speakers' reference production in the self- versus other-focused settings would diverge from a baseline situation.

Salience of Privileged Information The salience of speakers' privileged knowledge was manipulated within communicative settings. Participants were confronted with 40 experimental trials, consisting of 20 salient and 20 non-salient trials. In the salient trials, speakers' privileged figure was identically shaped to the target figure (e.g., both were circles) whereas in the non-salient trials both figures were differently shaped (e.g., a circle and a triangle). The salient trials were designed to elicit utterances that contrasted the target figure with the privileged one, whereas the non-salient trials assessed how often speakers included adjectives irrespective of the contrast presented. Figures in successive trials were never identically shaped, and half of the figures contrasted in size (big, small) and the other half in color (red, blue, green, black, grey, yellow) (Kaland et al., 2014). The figures' shape, color, and position were balanced across all trials. This resulted in 3 x 2 x 2 design, with communication setting (self-focus, other-focus, baseline) as a between subjects' factor, and trial type (salient, non-salient), and contrast type (color, size) as within subject factors.

Procedure

A throw of a dice decided which participant took the role of the speaker. Participants were told that, when the addressee was able to correctly identify the target figure, both the speaker and the addressee would obtain one point. Participants were told that failing to identify the target figure would result in zero points obtained, and the goal of the game was to obtain the maximum number of points.

Speakers and addressees sat down on opposite sides of a table. Speakers were seated next to a computer screen on which the experimental trails were presented using E-Prime version 2. At the beginning of each trial, addressees closed their eyes while the experimenter placed four cards on the table. When the four cards were put in place, speakers (a) hid one figure from their addressee's view by placing an occluder between the figure and their addressee. Subsequently in the other- and self-focused setting, speakers (b) answered a perspective question by selected either the three figures visible to their addressee (other-focus) or the four figures visible to them (self-focus). Hereafter, speakers (c) described the target object with just enough information so that their addressee was able to identify the intended figure. Speakers were instructed to look at the four cards on the table when referring to the target object. While hearing speakers refer to a figure, addressees opened their eyes and pointed at the intended figure on the table in front of them. Speakers subsequently (d) informed their addressee whether their selection was correct. Since speakers in the baseline setting were not confronted with a perspective-taking manipulation, these speakers only performed actions (a), (c), and (d). To ensure all steps of the procedure were executed correctly, the experimenter was present during the entire game.

The experimental game ended after 40 rounds. After the final round, speakers indicated on a ten-point scale to what extent they took into account their addressee's perspective during the game (*1 = not at all*, *10 = very much*). Since audio recordings were made of all sessions, participants' consent to making these recordings and using them for scientific purposes were collected. Afterwards, all participants were debriefed.

Coding

To measure speakers' reference to privileged information (RPI), we counted the adjectives that matched the contrast between the target and privileged figure. Adjectives that did not contrast the target figure to the privileged one were not taken into account. Speakers' RPI was calculated as a proportion (*1 = contrasting adjective uttered; 0 = no contrasting adjective uttered*).

Results

All dyads obtained the maximum of 40 points, indicating that they were able to correctly identify all targets. In figure 2, the mean proportions of speakers' informational leakage (RPI) as a function of the perspective manipulation (baseline, other-focus, self-focus), whether the target and speakers' privileged figure were similarly (salient trials) or differently (non-salient trials) shaped, and whether these contrasts were presented in either color or size are shown. Overall, speakers in the baseline setting referred to privileged information in half of the produced references (50%), followed by the other-focused (45%), and self-focused speakers (29%). Across the three communicative settings, speakers seem to have referred to privileged information to the same degree for salient (43%) and non-salient (40%) trials.
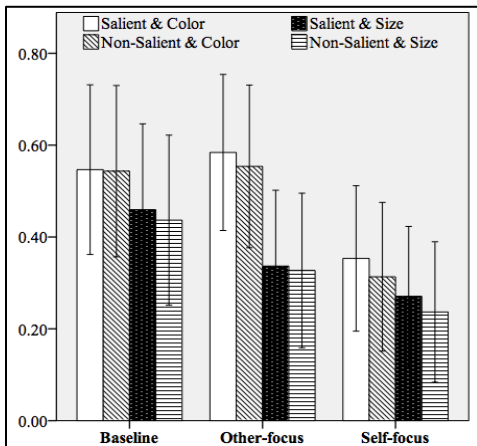
Figure 2: Mean proportions of speakers' RPI. Error bars represent 95% confidence intervals.

The influence of the perspective manipulation and the interplay with the salience of speakers' privileged information on the probability of privileged information to be mentioned was analyzed using a generalized linear mixed model analysis with a binomial distribution. For this we used the GLMER function from the lme4 package (Bates, Maechler, & Bolker, 2011) in R (version 3.3.0; www.r-project.org). We constructed a maximal model that included a full random effect structure (Barr, Levy, Scheepers, & Tily, 2013). This maximal model included the perspective manipulation (self-focus, other-focus, baseline), the salience of the trials (salient, non-salient), and the contrast (color, size) presented in the trials as fixed factors. We included random intercepts and slopes for both speakers and experimental trials. The probability distribution was set on binomial with a logit link function and we used parametric bootstrapping over 100 iterations to estimate the confidence intervals and p-values. When the maximal model did not converge, we excluded random slopes with the lowest variance until convergence was reached. We report the results of the models that were the first to converge (Barr et al., 2013). An alpha level of .05 was used for all statistical tests. The models treated the baseline setting as the reference category, to which speakers' RPI in the other- and self-focused settings were contrasted.

Influence of Perspective on Speakers' RPI Speakers' RPI in the self- and other-focused setting did not significantly differ from speakers' RPI in the baseline setting. For non-salient size trials, speakers in the other-focused ($M = .33$, $SD = .45$, $b = 0.80$, $SE = 2.07$, CI: [-3.02, 5.11]), and self-focused setting ($M = .24$, $SD = .41$, $b = 1.28$, $SE = 1.66$, CI: [-1.98, 4.52]), were just as likely as the baseline speakers ($M = .44$, $SD = .50$) to refer to privileged information. The same held for non-salient color trials: other-focused ($M = .55$, $SD = .47$, $b = 1.24$, $SE = 1.90$, CI: [-1.67, 5.76]), and self-focused speakers' RPI ($M = .31$, $SD = .43$, $b = -3.31$, $SE = 4.41$, CI: [-12.06, 5.21]) did not significantly differ from the baseline (M

$= .54$, $SD = .50$). This pattern also held for salient size trials: speakers' RPI in the other- ($M = .34$, $SD = .44$, $b = -0.07$, $SE = 1.61$, CI: [-2.92, 3.38]), and self-focused setting ($M = .24$, $SD = .41$, $b = 0.98$, $SE = 1.56$, CI: [-1.86, 4.25]) did not significantly differ from the baseline ($M = .46$, $SD = .50$). Finally, speakers' RPI on salient color trials in the other- ($M = .58$, $SD = .46$, $b = 0.57$, $SE = 2.36$, CI: [-3.38, 5.88]), and self-focused setting ($M = .35$, $SD = .42$, $b = -3.26$, $SE = 4.41$, CI: [-12.64, 4.67]) did also not significantly differ from the baseline ($M = .55$, $SD = .49$).

Influence of Salience on Speakers' RPI In the baseline setting, the salience of privileged information did not influence speakers' RPI. Baseline speakers were just as likely to refer to privileged information on non-salient ($M = .44$, $SD = .50$) and salient ($M = .46$, $SD = .50$) size trials ($b = 1.53$, $SE = 0.81$, CI: [-0.33, 2.86]), and on non-salient ($M = .54$, $SD = .50$) and salient ($M = .55$, $SD = .49$) color trails ($b = 0.46$, $SE = 2.04$, CI: [-3.05, 4.93]).

Baseline speakers' RPI was also not influenced by the contrast presented in the trials. Speakers were just as likely to refer to privileged information on non-salient size ($M = .44$, $SD = .50$) and non-salient color ($M = .54$, $SD = .50$) trials ($b = -1.91$, $SE = 1.93$, CI: [-6.59, 0.97]), as on salient size ($M = .46$, $SD = .50$) and salient color ($M = .55$, $SD = .49$) trials ($b = -1.91$, $SE = 2.23$, CI: [-6.81, 1.95]).

When the two perspective settings were contrasted to the baseline setting, no significant differences were found. Like the speakers in the baseline setting, other-focused speakers' RPI did not differ between salient ($M = .34$, $SD = .44$) and non-salient ($M = .33$, $SD = .45$) size trials ($b = -0.88$, $SE = 0.90$, CI: [-2.61, 0.93]), nor between salient ($M = .58$, $SD = .46$) and non-salient ($M = .55$, $SD = .47$) color trials ($b = -0.79$, $SE = 1.13$, CI: [-3.10, 1.32]). The same held for the self-focused speakers. Their RPI did not differ significantly between salient ($M = .24$, $SD = .41$) and non-salient ($M = .24$, $SD = .41$) size trials ($b = -0.30$, $SE = 0.90$, CI: [-2.03, 1.51]), nor between salient ($M = .35$, $SD = .42$) and non-salient ($M = .31$, $SD = .43$) color trials ($b = -0.24$, $SE = 1.16$, CI: [-2.58, 1.97]).

Like the baseline speakers, other- and self-focused speakers' RPI did not depend on the contrast presented in the trials. Other-focused speakers' RPI did not significantly differ between salient size ($M = .34$, $SD = .44$) and salient color ($M = .58$, $SD = .46$) trials ($b = 0.64$, $SE = 2.71$, CI: [-4.33, 6.27]), nor between non-salient size ($M = .33$, $SD = .45$) and non-salient color ($M = .55$, $SD = .46$) trials ($b = 0.64$, $SE = 3.45$, CI: [-5.32, 8.20]). Further, self-focused speakers' RPI did not significantly differ between salient size ($M = .24$, $SD = .41$) and salient color ($M = .35$, $SD = .42$) trials ($b = -4.24$, $SE = 4.43$, CI: [-13.71, 3.64]), nor between non-salient size ($M = .24$, $SD = .41$) and non-salient color trials ($M = .31$, $SD = .43$) ($b = -4.24$, $SE = 5.11$, CI: [-14.67, 5.37]).

Speakers' Self-Reported Perspective-Taking A one-way between-subjects ANOVA revealed that speakers' self-reported perspective-taking tendency significantly differed

between settings, *Welch's F* (2,57) = 4.43, *p* < .05. Tukey HSD post-hoc comparisons revealed that self-focused speakers (*M* = 7.73, *SD* = 2.94) reported a significant higher perspective-taking tendency than both other-focused (*M* = 5.62, *SD* = 3.63) and baseline speakers (*M* = 5.60, *SD* = 3.51) (both *p* < .05). Perspective-taking tendencies did not significantly differ between the other-focused and the baseline setting (*p* > .05). To investigate whether speakers' self-reported perspective-taking tendency corresponded with their actual behavior during the game, a follow-up logit mixed model analysis was conducted. This model included speakers' SELF-REPORT as fixed effect, a random intercept for subjects, and a by-subject random slope for the effect of SELF-REPORT. *P*-values were obtained using the Likelihood Ratio Test (LRT). The LRT revealed that speakers' SELF-REPORT was a significant predictor of their actual RPI, χ^2 (2) = 9.90, *p* < .001. As speakers' perspective-taking tendency increased, they were less likely to have leaked privileged information during the game, *b* = -2.75, *SE* = 0.45, *p* <.001.

Discussion

In this paper we studied whether eliciting speakers' self- versus other-focus would influence their subsequent reference production. We found that speakers in the other- and self-focused settings were just as likely to refer to privileged information as the speakers whose perspective-taking was not manipulated (i.e., in the baseline setting). Further, we did not replicate the results of (Kaland et al., 2014; Wardlow Lane & Ferreira, 2008; Wardlow Lane et al., 2006; Wardlow Lane & Liersch, 2012) who found that the salience of privileged information can boost the probability of it being leaked. In our study, speakers were just as likely to refer to private information, regardless of its salience. Perhaps speakers' tendency to retain a certain reference strategy throughout the game could have interfered with their audience design (Horton & Gerrig, 2002), and the extent to which they were influenced by the elicited perspective and the salience of their privileged knowledge.

In our study, 66% of speakers (*N*= 59) either referred to color and size contrasts on all trials, or they refrained from including any adjectives throughout the game. Speakers' consistent referring behavior has been supported by previous research (Brennan & Clark, 1996), and is strengthened by addressees' ability to identify the referent on the basis of speakers' descriptions (Clark & Krych, 2004). Addressees partaking in our study were always able to correctly identify the intended object, regardless of the presence or absence of speakers' informational leakage. Each time addressees correctly identified the target object, they signaled to speakers that the reference had been successful. This could have inspired speakers to keep hold of their referential tactic and to base their references on previous formulated descriptions. This tendency to be consistent could have interfered with our perspective-taking manipulation and the extent to which speakers were influenced by (the salience of) their privileged knowledge. Furthermore, in our study speakers' leakage did not bear negative consequences. As a

result, egocentric errors were not detected and speakers were not encouraged to adjust their reference production. This implies that increasing speakers' awareness of the negative consequences associated with their leakage could reduce the extent to which they would leak such information. However, as previous research has shown (e.g., Kaland et al., 2014; Wardlow Lane et al., 2006) incentives to keep privileged information confidential might increase speakers' attention to this information, thereby ironically boosting the likeliness of it being mentioned. Enhancing speakers' awareness of the negative consequences of their leakage thus might not be the right solution. There are, however, other factors that should be considered with regard to addressing speakers' consistency in reference production.

One of these factors is the self-paced method by which speakers were confronted to the instructions and perspective manipulation. The self-paced method could have induced the routineness by which speakers performed the instructions and completed the trials. Moreover, the fact that the perspective-taking manipulation was posed on speakers' private computer screen in which perspectives were not visibly marked could have reduced the intrusiveness of the elicited mindsets. Although speakers were explicitly trained to return their attention from their private screen to the physical context shared between them and their addressee *before* they identified the target figure, the possibility exists that speakers were still regarding their private screen (in which perspectives were not marked) while formulating their reference. These issues could be addressed in a future study by allowing the experimental leader to pace the experiment and to expose speakers in the shared physical context to the perspective-taking manipulation. For example, speakers could be explicitly asked to indicate which figures are visible to their addressee (i.e., eliciting an other-focus) or visible to themselves (i.e., eliciting a self-focus) by using the figures lying between them and their interlocutor.

Moreover, following the design of Kaland et al. (2014), speakers were confronted with six color manipulations compared to the two size manipulations. The obtrusive use of color could have induced speakers to refer to color contrasts on all of the experimental trials (Koolen, Goudbeek, & Krahmer, 2013), irrespective of the elicited perspective or the salience of privileged information. A future study could explore this possibility by equalizing the number of colors used to the number of size contrasts employed in the game.

An interesting finding of this study that merits further attention is the result of speakers' self-reported perspective-taking tendency and its relation to their reference production. Ironically, speakers with an elicited self-focus reported to have regarded their addressee's perspective *more* than the speakers in the other two settings. This self-reported tendency correlated negatively with speakers' previous leakage behavior, indicating that speakers with a high perspective-taking tendency were less likely to have leaked private information during the game. It thus seems that not an elicited other- but instead a *self*-focus activated speakers' awareness

of their interlocutor's informational need, reducing the likelihood of egocentric perspective errors to occur.

Differences in speakers' self-report and leakage between the self-focused and baseline setting can be explained by the presence or absence of the perspective manipulation. In the self-focused setting, speakers answered a question that enhanced their own mental representation of the scene, whereas in the baseline setting, perspective enhancements were absent. A more intriguing finding, however, is the occurrence of a stronger perspective-taking tendency by the self-focused speakers than by the other-focused speakers. This tendency can be explained using the objective self-awareness theory (Wicklund, 1975). According to this theory, self-aware persons reflect on themselves as if they are an object under scrutinization. Under this scrutinization, the difference between their actual and required behavior, derived from the standards that apply to the interaction, becomes salient. Our self-focused speakers could have found themselves in such a reflective state, especially since a cue of their addressee's different perspective was present (Gendolla & Wicklund, 2009). Speakers were able to see which figures were available for addressee's selection process (and which one was not). As a consequence, self-focused speakers could have been more aware of addressees' informational need than other-focused speakers, reducing the extent to which they were influenced by privileged information. This possible explanation needs further examination by exploring how much the self- versus other-focus perspective questions used in this study elicited speakers' self-awareness. For this, the validated Situational Self-Awareness Scale can be employed (Govern & Marsch, 2001).

References

Arnold, J. E., Kaiser, E., Kahn, J. M., & Kim, L. K. (2013). Information structure: linguistic, cognitive, and processing approaches. *Wiley Interdisciplinary Reviews: Cognitive Science, 4*(4), 403-413.

Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language, 68*(3), 255-278.

Bates, D., Maechler, M., & Bolker, B. (2011). lme4: Linear mixed-effects models using S4 classes. R package version 0999375–38. Retrieved from htttp.CRAN.R-project.org/packages= lme4.

Brennan, S. E., & Clark, H. H. (1996). Conceptual pacts and lexical choice in conversation. *Journal of Experimental Psychology-Learning Memory and Cognition, 22*(6), 1482-1493.

Clark, H. H. (1992). *Arenas of Language Use*. Chicago: University of Chicago Press.

Clark, H. H., & Krych, M. A. (2004). Speaking while monitoring addressees for understanding. *Journal of Memory and Language, 50*(1), 62-81.

Clark, H. H., & Murphy, G. L. (1982). Audience design in meaning and reference. *Advances in Psychology, 9*, 287-299.

Epley, N., Keysar, B., Van Boven, L., & Gilovich, T. (2004). Perspective taking as egocentric anchoring and adjustment. *Journal of Personality and Social Psychology, 87*(3), 327-339.

Gendolla, G. H., & Wicklund, R. A. (2009). Self-focused attention, perspective-taking, and false consensus. *Social Psychology, 40*(2), 66-72.

Govern, J. M., & Marsch, L. A. (2001). Development and validation of the situational self- awareness scale. *Consciousness and Cognition, 10*(3), 366-378.

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics. Volume 3: Speech acts*. New York: Seminar Press.

Heller, D., Gorman, K. S., & Tanenhaus, M. K. (2012). To name or to describe: shared knowledge affects referential form. *Topics in Cognitive Science, 4*(2), 290-305.

Horton, W. S., & Gerrig, R. (2002). Speakers' experiences and audience design: Knowing when and knowing how to adjust utterances to addressees. *Journal of Memory and Language, 47*, 589-606.

Horton, W. S., & Keysar, B. (1996). When do speakers take into account common ground? *Cognition, 59*(1), 91-117.

Kaland, C., Krahmer, E., & Swerts, M. (2014). White bear effects in language production: Evidence from the prosodic realization of adjectives. *Language and Speech, 57*(4), 470-486.

Keysar, B., Barr, D. J., Balin, J. A., & Brauner, J. S. (2000). Taking perspective in conversation: The role of mutual knowledge in comprehension. *Psychological Science, 11*(1), 32-38.

Keysar, B., Barr, D. J., & Horton, W. S. (1998). The egocentric basis of language use: Insights from a processing approach. *Current Directions in Psychological Science, 7*(2), 46-50.

Koolen, R., Goudbeek, M., & Krahmer, E. (2013). The effect of scene variation on the redundant use of color in definite reference. *Cognitive Science, 37*(2), 395-411.

Nadig, A. S., & Sedivy, J. C. (2002). Evidence of perspective-taking constraints in children's on-line reference resolution. *Psychological Science, 13*(4), 329-336.

Wardlow Lane, L. W., & Ferreira, V. S. (2008). Speaker-external versus speaker-internal forces on utterance form: Do cognitive demands override threats to referential success? *Journal of Experimental Psychology: Learning, Memory, and Cognition, 34*(6), 1466-1481.

Wardlow Lane, L. W., Groisman, M., & Ferreira, V. S. (2006). Don't talk about pink elephants! Speakers' control over leaking private information during language production. *Psychological Science, 17*(4), 273-277.

Wardlow Lane, L. W., & Liersch, M. J. (2012). Can you keep a secret? Increasing speakers' motivation to keep information confidential yields poorer outcomes. *Language and Cognitive Processes, 27*(3), 462-473.

Wicklund, R. A. (1975). Objective self-awareness. *Advances in Experimental Social Psychology, 8*, 233-275.