

Semantic predictability of implicit causes affects referential form choice

Kathryn C. Weatherford & Jennifer E. Arnold (UNC-Chapel Hill)

kaycew@live.unc.edu

In discourse, certain event roles are more likely to be mentioned again. In *Gary scared Anna* or *Anna feared Gary*, most people assume that Gary is the cause of the event, so after the word “because”, they expect Gary to be mentioned. Similarly, in *John threw the ball to Sue* or *Sue caught the ball from John*, people expect the goal character, Sue, to be involved in the following discourse (Stevenson et al., 1994). In both examples, one referent is more predictable. How does this affect the speaker’s word choice? It is well established that speakers tend to use attenuated word forms for predictable information, for example shorter pronunciations (Bell et al., 2009; Lieberman, 1967), or shortened words (e.g., “info” vs. “information”; Mahowald et al., 2013) when the context makes a word predictable. This work predicts that when the referent is predictable, speakers should prefer pronouns as compared with longer and less frequent names. In addition, predictability may contribute to accessibility (Chafe, 1976; Prince, 1981), which is thought to drive the use of pronouns (Ariel, 1990; Gundel et al., 1993).

Consistent with this line of work, speakers do use pronouns more when referring to goals than sources (Arnold, 2001; Rosa & Arnold, 2017). Yet there is remarkably robust evidence that for emotion verbs like scared/feared, the implicit cause is **not** more likely to be pronominalized than the non-cause (Fukumura & van Gompel, 2010; Kehler et al., 2008; Kehler & Rohde, 2013; Kravtchenko et al., CUNY 2016). Instead, speakers in these studies tended to use pronouns for reference to the subject, and names for the object. This creates a puzzle: why does the predictability associated with implicit causality not affect pronoun choice?

One possible explanation stems from the primary method used in these studies: passage continuation. Subjects are given a fragment, e.g. “Gary feared Anna because...”, and are asked to continue the sentence. Researchers examine the continuation to see who is referred to, and with what form (pronoun vs. name). One problem is that typical stimuli for this paradigm may not provide enough discourse support for predictability to have an effect. In comparison with transfer events, emotion events may be more difficult to conceptualize as they describe a psychological state, and are not easily imageable. This may disrupt conceptualization of the discourse context, especially for decontextualized stimuli. Passage continuations also require participants to invent a continuation on the spot, so they may not activate the causal coherence relation until they read the word “because”, possibly after they choose the referring expression.

Across two experiments (Exp 1: 56 ppts.; Exp 2: (replication) 45 ppts.), we tested whether predictability would affect pronoun production in a paradigm more similar to natural language – i.e. with greater contextual support, and where participants already knew the content of their contribution. In each trial, participants were given 2 facts to learn about a single character, where only one was a highly plausible continuation for the following story (Fig. 1, left fact). They then read a fragment of a story about 2 same-gendered characters, which included a prompt with either a subject-biased or object-biased emotion verb. The plausible fact was either about the implicit cause or non-cause, leading to a 2 (subject vs. non-subject) x 2 (implicit cause vs. non-cause) design. Instructions emphasized that participants should communicate the gist, but not the verbatim fact. Our critical question was: would people use more pronouns when referring to the predictable implicit cause than the less-predictable non-cause?

Surprisingly, both studies found greater pronoun use for the implicit cause than the non-cause, although for Exp. 1 this was qualified by a significant interaction with subject-hood, where the implicit cause effect only occurred for object references. In Exp. 2 there was a main effect of implicit cause, with no interaction. This study provides the first evidence that under some circumstances, implicit causality can affect pronoun use. We hypothesize that our paradigm supported the impact of predictability by 1) providing greater discourse context, which may have strengthened representations of predictability, and by 2) allowing speakers to plan their response earlier, incorporating their knowledge of coherence relations.

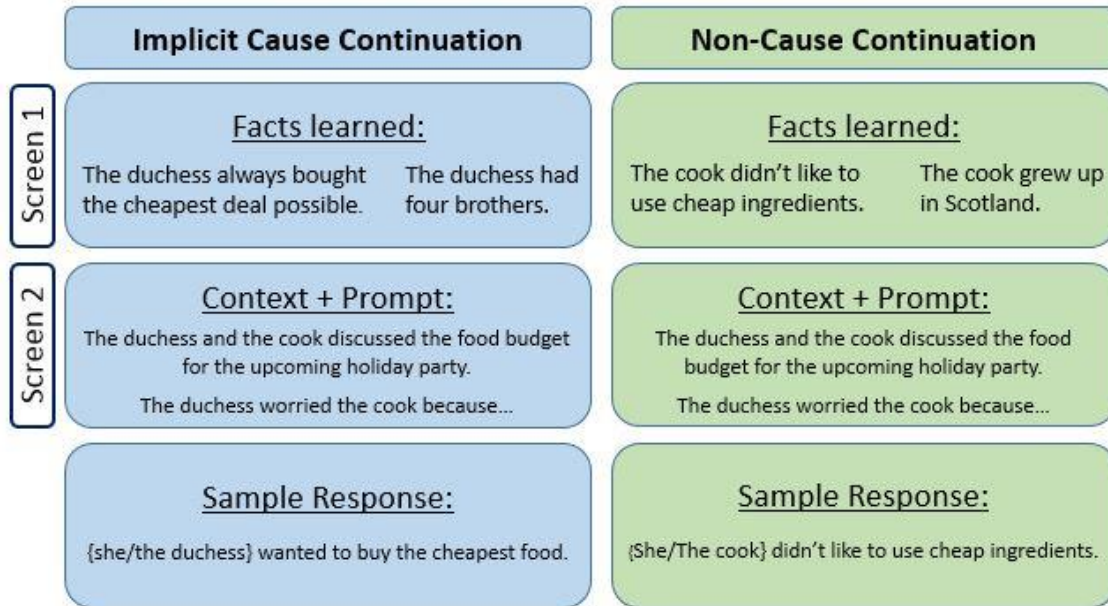


Figure 1. Novel story re-telling paradigm

Does predictability affect referential form choice?

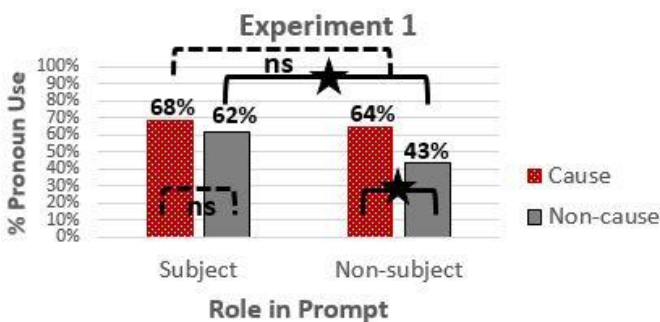


Figure 2.

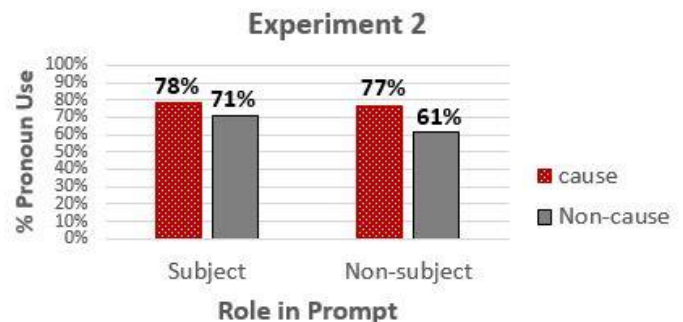


Figure 3.

References

- Ariel, M. (1990). *Accessing Noun-Phrase Antecedents*. Routledge.
- ✦ Arnold, J. E. (2001). The effect of thematic role....*Discourse Processes*, 31, 137-162.
- ✦ Bell, A., J. Brenier, M. Gregory, and C. Girand. (2009). Predictability effects on durations....*JML*, 60, 92-111.
- ✦ Chafe, W. (1976). Givenness, contrastiveness....In Li (Ed.), *Subject and Topic*, (pp. 25-56). Academic Press.
- ✦ Fukumura, K. & van Gompel, R.P.G. (2010). Choosing anaphoric expression....*JML*, 62, 52-66.
- ✦ Kehler, A., Kertz, L., Rohde, H. & Elman, J.L. (2008). Coherence and coreference revisited. *Journal of Semantics*, 25, 1-44.
- ✦ Kehler, A. & Rohde, H. (2013). A probabilistic reconciliation....*Theoretical Linguistics*, 39, 1-37.
- ✦ Kravtchenko, E., Modi, A., Demberg, V., Titov, I., and Pinkal, M. (2017). Does referent predictability affect rate of pronominalization? CUNY talk, MIT.
- ✦ Lieberman, P. (1967). Intonation, perception, and language. *M.I.T. Research Monograph*, 38, xiii, 210.
- ✦ Mahowald, K., Fedorenko, E., Piantadosi, T., & Gibson, E. (2013). Info/information theory....*Cognition*, 126, 313-318.
- ✦ Prince, E.F. (1981). Toward a Taxonomy....In P. Cole (Ed.), *Radical Pragmatics*, (pp. 233-255). New York: Academic Press.
- ✦ Rosa, E. C., & Arnold, J. E. (2017). Predictability affects production....*JML*, 94, 43-60.
- ✦ Stevenson, R.J., Crawley, R.A., & Kleinman, D. (1994). Thematic roles....*LCP*, 9, 519-548.