Thematic Role and Referential Form in a Novel Story-telling Paradigm

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The structure of events appears to influence the way people talk about them. In some cases (see ex. 1), event roles have a much higher tendency to be mentioned again – that is, they are predictable. In some emotion verbs like (1), Gary is considered the expected cause of the scaring/fearing events, and is more likely to be mentioned again (Fukumura & van Gompel, 2010; Hartshorne et al., 2015; Kehler et al., 2008). In (2), Sue is the goal of the transfer event, and is expected to participate in the next event, thus making her more likely to be mentioned (Stevenson et al., 1994). Critically, these biases depend on the relation between the two clauses, where the implicit causality effects in (1) are supported by a causal continuation, and the goal bias in (2) is supported by a next-mention continuation.

1a. Gary scared Anna because…	2a. John threw the ball to Sue. Then…
1b. Anna feared Gary because…	2b. Sue caught the ball from John. Then…

An unanswered question is whether higher likelihood of mention increases the likelihood that the speaker might use a pronoun. We know that pronouns tend to be mentioned when the referent is accessible or topical (Chafe, 1994), and predictability might contribute to accessibility. Yet there is conflicting evidence on this point. On one hand, several studies (Fukumura & van Gompel, 2010; Kehler et al., 2008) have shown that thematic roles have no effect on rate of pronominalization, primarily based on studies with emotion verbs like in (1). By contrast, speakers do use pronouns more for goals than sources (Arnold, 2001). Why do the same effects not occur for emotion verbs?

We hypothesized that emotion verbs might require greater discourse support than transfer verbs to affect production choices. Predictability itself is a strange notion for production – speakers do not need to predict their own utterances, because they are in control of planning them. Instead, predictability is likely to be correlated with differences in the representation of these discourse events. Predictable event sequences may be more tightly related to each other, and have stronger discourse representations, thus supporting the use of pronouns.

We therefore designed a novel paradigm for investigating reference production with emotion verbs. Prior work exclusively used story continuation paradigms, which are decontextualized and place heavy production demands on the participant to invent a sentence on the spot. This is very unlike everyday language use, where information about an event is readily available to a speaker and the discourse context is more elaborate. Therefore the effects of event role predictability may be more difficult to observe with implicit causality verbs in this paradigm.

Instead, we created a novel cooperative story-telling paradigm, based on materials created by Rosa & Arnold (2015; jaapstimuli.web.unc.edu). Participants were invited into a role-playing scenario, in which they were given the role of a tabloid reporter investigating a murder mystery. Participants learned facts about 6 different story characters (*the duke, the duchess, the maid, the butler, the cook, the driver*). Each fact was represented by a picture of a single character, e.g. here "The driver had a bad back". Participants then helped tell a story with these facts. In each trial, subjects were presented with a context picture and a fact picture (see figure). The detective described the context picture, e.g. *The driver and the cook brought in the groceries.* Subjects then read the prompt and continued the story with the matching fact, e.g. *The driver appreciated the cook because…. he had a bad back.*

This paradigm has several desirable features: 1) Subjects knew they would be discussing causal events, meaning the causal relation was activated ahead of time – similar to real life, where people know the role of an utterance from the moment of conceptualization. 2) All the trials together formed a single story, providing a strong discourse context to support conceptualization of each event. 3) The instructions emphasized that participants should communicate the fact concept, but not the verbatim wording, in a natural story-telling manner.

The key question was whether the rate of pronominalization in the response (*the driver / he*) would be influenced by the referent's thematic role in the context sentence. Would implicit causes be pronominalized? We controlled for the expected bias toward pronominalizing subject referents by including both active and passive versions of each sentence. Thus, the target was either the subject or nonsubject and the cause or noncause of the prompt clause, either in active or passive voice, resulting in a 2x2x2 design (grammatical role x thematic role x voice). In half the trials the characters were the same gender, in half different.

Causal continuation condition	Non-causal continuation condition
Context and Prompt: The driver and the butler prepared for target practice. {The driver impressed the butler / The butler was impressed by the driver} because…	Context and Prompt: The driver and the cook brought in the groceries. {The driver appreciated the cook / The cook was appreciated by the driver} because…
Response: he was an excellent shot.	Response: he had a bad back

Data (37 subjects) revealed that, contrary to our hypothesis, speakers did not systematically use pronouns to refer to the implicit cause. Instead, there was a trend to use pronouns more for **noncauses** than causes in all conditions except passives/nonsubject continuations. This emerged as a cause x subjecthood interaction (p = .02) and a 3-way interaction (cause x subjecthood x voice; p = .02). We also observed main effects of subjecthood and gender.

Our model also included an estimate of the plausibility of each "fact" as an explanation for the given event (rated by 9 different subjects). If pronouns are used for continuations that are more tightly related to the preceding context, plausibility should increase pronoun use.
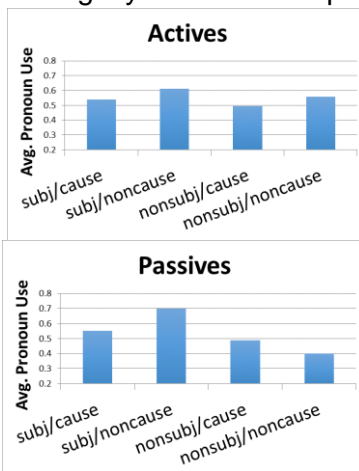
However, again contrary to predictions, greater item plausibility was a marginal predictor of greater name (not pronoun) usage (p = 0.09). This is consistent with the fact that higher ratings were given to nonsubject vs. subject continuations in the rating study (p = .01). In addition, ratings reflected an interaction between cause and, gender (p = .02), with higher cause ratings only for same-gender items.

In sum, contrary to our hypothesis, speakers did not use pronouns to refer to implicit causes more than noncauses. This is consistent with claims that predictability does not influence reference form (Kehler et al., 2008; Fukumura & van Gompel, 2010). However, it is inconsistent with evidence that speakers use reduced forms to refer to the goal argument in transfer verbs, which is the more predictable referent in narrative continuations (Arnold, 2001; Rosa & Arnold, under review). Ongoing work examines how these verb types differ in the predictability and naturalness of different discourse continuations.

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