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The historical context in conversation: Lexical differentiation and memory for the discourse history



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ABSTRACT

When designing a definite referring expression, speakers take into account both the local context and certain aspects of the historical context, including whether similar referents have been mentioned in the past. When a similar item has been mentioned previously, speakers tend to elaborate their referring expression in order to differentiate the two items, a phenomenon called lexical differentiation. The present research examines the locus of the lexical differentiation effect and its relationship with memory for the discourse. In three experiments, we demonstrate that speakers differentiate to distinguish current from past referents; there was no evidence that speakers differentiate in order to avoid giving two items the same label. Post-task memory tests also revealed a high level of memory for the discourse history, a finding that is inconsistent with the view that failures of memory underlie low differentiation rates. Instead, memory for the discourse history, while necessary, is not sufficient for speakers to design language with respect to the historical context. Speakers must additionally view the discourse history as relevant to design language with respect to this broader context. Finally, measures of memory for past referents point to asymmetries between speakers and listeners in their memory for the discourse, with speakers typically remembering the discourse history better.

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1. Introduction

For communication to be successful, conversational partners must take into account each other's general knowledge and memory for the ongoing discussion. Consider the process of designing a definite referring expression. For a speaker to successfully communicate her meaning, she must take into account properties of the intended referent, as well as contextual information, in order to uniquely identify the intended referent (Roberts, 2003). The contextual information that shapes the design of referring expressions includes information in the *immediate context*, such as the characteristics of other candidate referents (Olson, 1970; Osgood, 1971). The way in which a given object will be described, then, depends on the properties of the other items in the local context (Beun & Cremers, 1998; Brennan & Clark, 1996; Brown-Schmidt & Tanenhaus, 2006; Horton & Keysar, 1996; Nadig & Sedivy, 2002; Wardlow Lane & Ferreira, 2008). For example, imagine a situation where some friends are at a shoe shop, and one friend wants to point out the shoes she would like to buy. In such a situation,

she would have to distinguish her intended referent from the many other items in the local context, likely through the use of a modified referring expression, as in “*The leopard-print heels are super cute!*”, rather than “*The shoes are super cute!*”

Identifying the features that distinguish the intended referent from those in the local context is a cognitive process that unfolds over time and must be coordinated with utterance planning. As a result of this interplay between contextual encoding and language planning, speakers sometimes produce over-informative or under-informative expressions (Deutsch & Pechmann, 1982; Engelhardt, Bailey, & Ferreira, 2006; Ferreira, Slevc, & Rogers, 2005; Maes, Arts, & Noordman, 2004; Olson, 1970; Sedivy, 2003). The likelihood of producing a locally overinformative expression varies with adjective class (Sedivy, 2005; Brown-Schmidt & Konopka, 2011), and can occur when analysis of the local context lags behind production planning (Pechmann, 1989).

Another source of contextual constraint in conversation is the *historical discourse context*, which includes information that was discussed in the past (Brennan & Clark, 1996). A speaker who takes into account both the immediate discourse context as well as the historical discourse context may produce an expression that is overspecified with respect to the immediate context, but appropriately informative if the discourse history is taken into

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account. Consider the case of our shoe-shopping friends. If they were to continue their conversation over a cup of coffee, reference to the newly-purchased shoes in the new context would no longer require the modifier “leopard-print”. Yet studies of language use in dialogue show once a term has been established, that speakers persist in the use of these terms even if the context changes and the modifier is no longer necessary, as in “*I just love my new leopard-print heels*” produced in a context with only a single pair of shoes (Brennan & Clark, 1996; Van der Wege, 2009). This tendency to persist in the use of previous terms, termed *lexical entrainment*, is one example of the influence of the historical discourse context. In the present research we examine a related effect of historical influence on referring—the process of *lexical differentiation*, in which speakers take into account past reference when designing new referring expressions.

1.1. *Lexical differentiation and its source*

Lexical differentiation refers to a discourse phenomenon in which speakers differentiate two sequentially presented objects from the same category (Van der Wege, 2009). For example, imagine a situation in which a speaker describes one shirt in the context of several unrelated objects. In a context like this one, the speaker is likely to refer to the shirt with a bare noun phrase, as in “*the shirt*”. However, if she were to later refer to a second, distinct shirt in the context of several unrelated objects, she might differentiate the second shirt from the first by using a modifier, as in “*the striped shirt*,” even though the modifier is not necessary in the local context (i.e., “*the shirt*” would suffice to uniquely identify the intended referent). Speakers also sometimes use a different noun to differentiate the second object from the first, as in “*the blouse*” rather than “*the shirt*” (see Yoon & Brown-Schmidt, 2013). These findings show that the discourse history influences how speakers design referring expressions.

According to Van der Wege (2009), speakers lexically differentiate in order to avoid giving the same label to two different entities, a process termed “pre-emption by similar form” (also see Clark & Clark, 1979). When speakers refer to the second object, they prefer to use a distinct label that contrasts with the previously established label; in other words, the speaker avoids giving the label, “*the shirt*”, to two different entities. By calling the second shirt “*the striped shirt*” or “*the blouse*”, the speaker is able to differentiate the two labels. The idea behind pre-emption by similar form is that the previously used label “*the shirt*” pre-empts the subsequent use of the same label to refer to a different item, thus creating the need for lexical differentiation. If this view of the lexical differentiation effect is correct, differentiation should not be observed if the speaker had not labeled the first entity with the basic object label. For example, if the speaker were to refer to the first shirt with a locative expression, such as “*the top left one*”, there would be no pre-emption of the label “*the shirt*”, and thus no need to describe the second shirt with a modifier (instead “*the shirt*” would be an appropriate label for the second shirt). Alternatively, the locus of the differentiation effect might be an attempt to distinguish current from past referents, regardless of how they had been named. If so, any previous reference to a shirt—with a locative or a descriptive expression—should increase the likelihood that the speaker would differentiate the second shirt from the first.

1.2. *The relationship between lexical differentiation and memory for past referents*

A necessary precondition to designing referential expressions with respect to the historical discourse context is successfully accessing a memorial representation of the previous referent when

planning a description of the current referent. If a speaker fails to remember describing a shirt in the past, they would be unlikely to differentiate the current shirt from the previous shirt, instead producing the same expression, “*the shirt*”, to refer to both shirts. Failures to remember the past discourse context may explain why differentiation is relatively infrequent: Speakers differentiated only 7.5% of the time in Yoon and Brown-Schmidt (2013)’s study and 19–33% in Van der Wege (2009)’s study in the “real audience” condition (19% for atypical objects; 33% for typical objects; see Van der Wege, 2009, Fig. 5). The larger effect in Van der Wege’s study is likely due to methodological differences. In particular, the use of atypical category exemplars in the stimulus set, and a design in which each of 12 items in a display were referenced may have encouraged speakers to distinguish current from past referents.

Yoon and Brown-Schmidt (2013) extended the lexical differentiation effect in a paradigm that examined how listeners interpreted these lexically differentiated expressions. In that experiment, the first of two key referents (e.g., two different shirts) was labeled, e.g., “*the shirt*”, or located, e.g., “*the top left one*”, and then in the critical condition, the speaker referred to the second (distinct) shirt with a modified expression, as in “*the striped shirt*”. Somewhat surprisingly, analysis of listener eye-gaze as they interpreted these expressions found no evidence that listeners expected speakers to differentiate the two objects in the naming condition more than the locating condition. One interpretation of these findings is that both labeling and locating the first shirt prompted listeners to expect differentiation when listening to a description of the second shirt. Whether speakers differentiate in both of these circumstances is an open question that the present work is designed to address.

Another possibility is that listeners may have not remembered the previous discourse referent when interpreting these utterances. When considering the role of memory in producing or expecting lexical differentiation, a relevant phenomenon is the *generation effect*, which refers to the finding that the act of generating information promotes better memory for that information when compared to reading (Slamecka & Graf, 1978). In an analysis of what information tends to get repeated over the course of a conversation, Knutsen and Le Bigot (2014) report that referring expressions like “*the market*” are more likely to be repeated in a conversation by the person who first introduced that topic into the conversation, consistent with a generation effect. McKinley, Brown-Schmidt, and Benjamin (in preparation) similarly report a generation benefit for item recognition in a natural conversation paradigm where the “items” were pictures that participants discussed with one of two conversational partners. Based on these findings, speakers may have better memory for what has been said in conversation, compared to listeners. Listeners’ comparatively worse memory for past referents, then, may explain the apparent lack of differentiation in comprehension (Yoon & Brown-Schmidt, 2013).

1.3. *The present research*

The goal of the present research is to examine the locus of the lexical differentiation effect and its relationship with memory for past discourse referents. In Experiments 1 and 2, we elicit a differentiation effect in language production, and examine the situations in which it does and does not occur in order to understand the influence of the historical discourse context on referring. In Experiment 3, we examine the same question in situations that include an unmentioned, but target-related context item. Measures of memory for the discourse history in Experiments 1–3 are used to evaluate whether poor memory for past referents explains the low incidence of differentiation, and listeners’ consequent lack of expectation for it (Yoon & Brown-Schmidt, 2013).

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