

Ellipsis in context: The interaction of identity and discourse salience

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The possibility of exophoric (antecedentless) verb phrase ellipsis (VPE) [1-2, i.a.] presents a challenge to traditional accounts of VPE based solely on linguistic identity [3-8, i.a.]. Whether salient nonlinguistic and linguistic information have the same status in VPE interpretation [1] or nonlinguistic information is only incorporated via accommodation [2] has not been resolved. In two experiments, we examine the interaction between discourse salience and linguistic identity. In Experiment 1, we show that salient nonlinguistic information can be recruited to (re)construct an antecedent for a VPE site, even in the presence of an overt antecedent. Experiment 2, however, shows that linguistic identity supersedes discourse salience as a locus for antecedent construction. Our results support a model in which linguistic information contributes more strongly to VPE interpretation than nonlinguistic information, which can affect interpretation via accommodation.

Experiment 1 (subj n=146 AMT workers) Each trial featured a nonlinguistic context presented as a comic strip and a simultaneously presented text dialogue between two characters. In the example in Table 1, the father always uttered the VPE Reply as a response to the son's request. The *Linguistic Antecedent* (son's utterance) could be absent (Exophoric), present with no numeral (Unmodified), or present with a numeral (Modified). The *Nonlinguistic Context* (comic strip) made no reference at all to the numerosity of the referent (Unavailable), made the numerosity recoverable but not salient (Available), or made the numerosity highly salient (Salient). These manipulations created 9 (3x3) conditions. Finally, for each of the 9 conditions, the *VPE Interpretation* question solicited ratings (on a 1-7 scale, also shown simultaneously) for the VPE to be interpreted as not containing a numeral modification ("buy candy bars"; Unmodified Interpretation) or containing a numeral modification ("buy five candy bars"; Modified Interpretation) (9x2=18 conditions total). There were 6 critical trials and 10 fillers. The goal was to examine whether and how the salience of the numeral information supplied by the nonlinguistic context can modulate VPE interpretations.

Figure 1 shows the results. For the Exophoric conditions, paired comparisons showed that the numeral-modified VPE interpretation increased its rating as a function of the increased salience of the numeral information in the Nonlinguistic Context (p 's $<.05$), confirming that a VPE antecedent can be reconstructed from salient nonlinguistic context. When there is an overt linguistic antecedent (non-exophoric conditions), the VPE interpretation that is identical to the antecedent is always rated higher than the non-identical one (p 's $<.001$). However, Salient numeral information from the nonlinguistic context boosted the rating for the Modified Interpretation when the linguistic antecedent was Unmodified (p 's $<.01$), suggesting that salient nonlinguistic information can be used to enrich the linguistic antecedent, albeit in a restricted manner.

Experiment 1 showed that salient discourse information dominates VPE interpretation when there is no explicit linguistic antecedent, but otherwise linguistic identity is preferred for VPE interpretation. One explanation of these findings is to assume VPE is resolved around a salient question under discussion (QUD), which is supplied either by salient discourse information in the nonlinguistic environment or by an explicit linguistic antecedent, assuming that an uttered antecedent is automatically more salient than the implicit discourse information in the environment. An alternative account is to acknowledge VPE resolution under identity and accommodation of a structure reflecting salient non-linguistic information as two separate but interacting mechanisms. Experiment 2 aims to tease these two accounts apart.

Experiment 2 (n=164) shared the same design as Experiment 1 except: the VPE Reply utterance was replaced with the complete unmodified or modified VPE Interpretation (e.g., "We can't buy any candy bars."), and the subjects provided a 1 to 7 rating of how *coherent* they thought the Reply was given the prior information. Assuming that the exchange is coherent only when the reply properly addresses the QUD raised by the previous context and/or utterance, the coherence rating task tracks what QUDs can be raised by salient linguistic and nonlinguistic contexts. If the unified QUD account can completely explain the results from Experiment 1, we should expect the results from Experiment 2 to closely track those from Experiment 1. This prediction is largely borne out (Figure 2). However, an important finding is that the coherence ratings of the two types of Replies are not significantly different with an Unmodified Antecedent and Salient Context ($p >.4$). This shows that the linguistic antecedent does not contribute more strongly to the QUD than the non-

linguistic context does, so the QUD account cannot explain why the antecedent-identical reading is preferred in Experiment 1. Linguistic identity plays a larger role in VPE interpretation than it is implicitly granted in the QUD account.

Conclusion: In two experiments, we showed that VPE interpretation considers both linguistic and nonlinguistic information, but that discourse salience is subordinate to linguistic identity as a locus of ellipsis resolution. Ellipsis resolution based solely on a discourse-salient QUD is not supported. The results support a model of ellipsis interpretation in which resolution under identity is dominant, but a new structure reflecting salient nonlinguistic information can be accommodated.

Table 1: Factors & levels for Experiment 1

Nonlinguistic Context	Antecedent	Reply	VPE Interpretation
<i>Unavailable:</i> Father and son stand in grocery store aisle near candy bars.	<i>Exophoric:</i> [no antecedent]	Father: We can't.	<i>Unmodified:</i> On a scale from 1 to 7, where 1 is the least likely and 7 is the most likely, how likely do you think it is that the father meant: We can't buy any candy bars.
<i>Available:</i> Son places five candy bars in cart at one time.	<i>Unmodified:</i> Son: I want to buy candy bars!		<i>Modified:</i> ...We can't buy five candy bars, but maybe we could buy fewer.
<i>Salient:</i> Son conspicuously places five candy bars in cart one at a time.	<i>Modified:</i> Son: I want to buy five candy bars!		

Figure 1: Experiment 1 results. Horizontal split: Antecedent type. Horizontal axis: Nonlinguistic Context type. Vertical axis: Mean likelihood rating. Error bars: Standard error.

VPE Interpretation
 ● Unmodified VPE Interp.
 ▲ Modified VPE Interp.

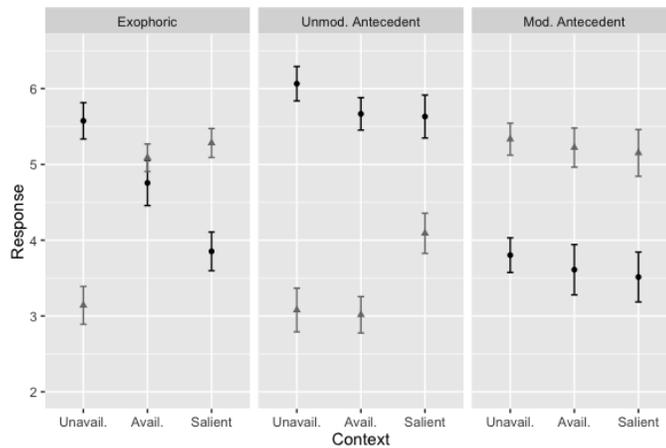
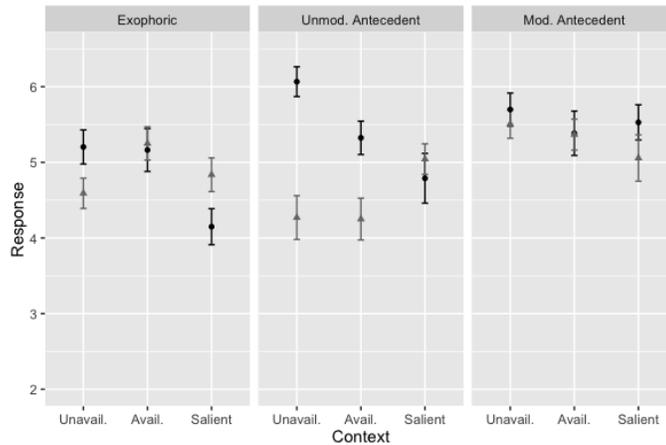


Figure 2: Experiment 2 results. Horizontal split: Antecedent type. Horizontal axis: Nonlinguistic Context type. Vertical axis: Mean coherence rating. Error bars: Standard error.

Reply
 ● Unmod. Reply
 ▲ Mod. Reply



References: [1] Miller & Pullum (2013); [2] Merchant (2004); [3] Hankamer & Sag (1976); [4] Fiengo & May (1994); [5] Chung, et al. (1995); [6] Dalrymple, et al. (1991); [7] Hardt (1993); [8] Merchant (2001)