

A Note on Novel Verb Tasks

Clifton Pye

The University of Kansas

Address for Correspondance:

Linguistics

The University of Kansas

Lawrence, KS 66045

USA

Abstract

Many examples of experiments employing novel verb stimuli have appeared recently. In this note, I examine the rationale for the use of novel verbs and the problems that experimenters face when employing novel verb stimuli. Experimenters turn to novel word studies when they have concerns about the effects of prior exposure on their subjects' performance. The main problem novel verbs pose is the addition of a significant uncontrolled semantic component that makes such experimental tasks unreliable sources of information on language acquisition.

Novel Verb Tasks

Many examples of experiments employing novel verb stimuli have appeared recently (e.g., Pinker et al. 1987; Schwartz 1988; Behrend 1990; Braine et al. 1990; Gropen et al. 1991a & b; Golinkoff et al. 1996; Brooks & Tomasello 1999). In this note, I examine the rationale for the use of novel verbs and the problems that experimenters face when employing novel verb stimuli. Experimenters turn to novel word studies when they have concerns about the effects of prior exposure on their subjects' performance. The main problem novel verbs pose is the addition of a significant uncontrolled semantic component that makes such experimental tasks unreliable sources of information on language acquisition.

Psycholinguists have used novel word tasks for decades with great success. Everyone in the field of language acquisition knows of Jean Berko Gleason's paper examining children's ability to inflect a number of novel word types (Berko 1958). This study contains elements that experimenters today can usefully incorporate into their own studies. One of the most important of these controls was the use of real word stimuli in addition to the use of novel word stimuli. The inclusion of real word stimuli provides an essential control that is missing from many novel word experiments. Berko noted that her subjects performed much worse on the novel word stimuli than on the real word stimuli, which is a common finding. Fast-mapping to the contrary, most two-year-olds are not adept at picking up experimentally targeted nonce words and using them in novel contexts. Experimenters must be careful about concluding whether they are making discoveries about the structure of children's grammar or their level of cognitive processing.

Another aspect of the Berko tasks that distinguishes them from the novel verb studies is that Berko focused primarily on children's ability to inflect new words. Tasks that examine children's inflectional abilities require a minimal semantic commitment. When asked for the plural

of a novel noun like *wug*, or the past tense form of a novel verb like *rick*, subjects do not really need to know what the words refer to. Inflectional processes operate on relatively superficial phonetic forms. The phonetic form of the inflection is often determined by the phonetic form of the stem, e.g., the choice between the English plural allomorphs [-s], [-z], and [-əz]. Inflection enables researchers to use simple novel word teaching paradigms which present minimal information about the novel word's meaning. Derivational processes, on the other hand, are sensitive to phonetic and semantic features of the stem, e.g., the reversible prefix [un-] which can be added to some verbs (*untie*, *unshoe*), but not others (**unsqueeze*, **untalk*). Novel word tasks that focus on derivational processes with significant semantic components can only produce valid results to the extent that the experimenters understand the semantic features in their language. This understanding is lacking in the absence of a mature theory of lexical semantics.

I will discuss the difficulties that novel verb tasks impose by looking at one study in detail. Brooks & Tomasello (1999) examined children's ability to learn constraints on verb argument structure for two novel verbs. They introduced their first verb, *meeek*, in association with a puppet pulling a small object to the top of a ramp. They introduced their second verb, *tam*, in association with a puppet swinging a toy on the end of a rope. The authors also provide English glosses for their novel verbs. They gloss *meeek* as 'make go up' / 'go up' and *tam* as 'swing'. They introduced both verbs to half of their subjects in transitive constructions and to the other half of their subjects in intransitive constructions, and tested to see if the children would extend the novel verbs to new transitivity contexts.

The authors set out to test Pinker's (1989) claim that children rely on semantic verb subclasses to help restrict verb argument structure. Their novel verbs exhibit semantic features of

two verb subclasses that Pinker discusses in relation to the causative alternation. The authors classify *meek* with Pinker's verbs of inherently directed motion, which do not alternate between transitive and intransitive constructions (e.g., *lift, go up*). They classify *tam* with Pinker's verbs manner of motion verbs, which can be used in transitive and intransitive constructions (e.g., *roll, swing*). They then predicted that children using Pinker's subclass distinctions would use *tam*, but not *meek* in transitive and intransitive constructions.

The first problem this type of task faces is to ascertain the meaning of the new verbs. One of the paradoxes of novel verb experiments is that investigators pay little attention to defining the meaning of the experimental verbs. A typical approach to inventing novel verbs is to take a real verb and add an experimental twist. These twists can involve the use of a novel instrument (Maratsos et al. 1987; Brooks & Tomasello 1999), a novel manner (Gropen et al. 1991b), or a novel position (Golinkoff et al. 1996). This approach to inventing verb meanings ignores the fact that all lexical meanings, and especially those of verbs, belong to intricately connected semantic fields. Languages pick out different semantic fields for elaboration, e.g., English sparkle verbs, Japanese verbs for dressing, and Navajo verbs for lifting objects. This semantic elaboration is the response to centuries of interaction with a specific social environment.

Phonology can provide an informative model for the types of structural factors that affect language acquisition. I do not know of any researcher who would introduce children learning English to novel words incorporating ejective stops or back, unrounded vowels. While such sounds belong to the phonological inventories of other languages, they would impose novel structural challenges that lie outside the acquisition demands of the English phonological system. The semantic relations between verbs pose a similar structural constraint. Few experimenters

Novel Verb Tasks

discuss how their novel verbs fit into the semantic structure of the target language. The result is that novel verb experiments risk presenting subjects with non-linguistic perceptual processing tasks that do not engage the subjects' semantic competence.

It is not possible to determine if the experimenters succeeded in creating verbs with linguistically relevant semantic features in the absence of more robust contexts of usage. Experimenters must distinguish between the operation of cognitive/perceptual strategies and linguistic meaning in novel verb tasks and take steps to insure that the tasks present subjects with enough information to infer linguistically relevant features of verb meaning rather than associations between labels and percepts. Picking an apple and picking a cherry have distinct perceptual attributes and yet English uses the same verb to refer to such events while Japanese uses distinct verbs. Brooks & Tomasello introduced *meek* in the context of a tilted apparatus, but there is no way of knowing if *meek* can be extended to a horizontal or vertical apparatus, or what kinds of apparatus are essential parts of the action that *meek* denotes. Verbs acquire semantic features through use by a community of speakers often by contrast with the use of other verbs. Novel verb tasks fail to provide subjects with the information about semantic contrasts and semantic extensions that is necessary to construct a linguistic meaning for real verbs.

One measure of the artificial nature of novel verbs is to consult speakers' intuitions about the use of the verbs in linguistic contexts outside of the experimenters' primary focus. For example, I do not have clear intuitions about any of the following sentences:

Ernie unmeeked the car.

The car is intamable.

Big Bird is a meeker.

Bert remeeked Ernie.

That ball has tamableness.

I suspect that my own lack of intuitions would translate to a high degree of variation in the judgements among other adult speakers. Speakers have acquired intuitions about real verbs that enable them to use these verbs in a variety of novel linguistic contexts. We currently lack any information on the degree of exposure that adult subjects require to form categorical judgements about the use of novel verbs in a wide range of contexts. Researchers need to provide adult judgements about the use of novel verbs outside of one or two experimental contexts.

Another difficulty one observes with this type of experiment is the use of a real verb gloss for the novel verbs. Glosses provide experimenters with the semantic crutches necessary to make gross semantic distinctions in the use of novel verbs, but create a fundamental difficulty at the same time. If experimenters rely on their glosses to make crucial decisions about the experimental design, there is no reason to believe that subjects will not rely on glosses in performing the experiment. The use of glosses by experimental subjects effectively turns a novel verb task into an ordinary verb task in which the goal for the subject is to guess which real verb the experimenters have in mind. Subjects who guessed correctly that *tam* meant 'swing' or 'move' would be willing to use *tam* in different contexts while subjects who guessed incorrectly that *tam* meant 'push' or 'touch' or 'swerve' would be less willing to use the novel verb in a new context. If both experimenters and subjects rely on real verbs to interpret novel verb experiments, there is no reason to use novel verbs. Controlling the verbs that subjects actually have in mind would seem to be the first order of business in assessing a child's verb use.

The few experimental investigations that have used real verbs in addition to novel verbs

Novel Verb Tasks

have revealed a significant disparity in responses to these stimuli. The Braine et al. study (1990) found that adult subjects uniformly rejected the use of the real verbs *fall* and *dance* in transitive contexts (0.00% transitive use) while the same adults accepted the use of novel intransitive verbs in transitive contexts two thirds of the time (0.66% transitive use). Even though their adult subjects made a statistically significant distinction between the uses of novel verbs introduced in transitive and intransitive contexts, the adult subjects did not make a grammatical distinction (over 90% agreement). Such discrepancies between adult treatments of real and novel should give experimenters pause in making claims about language on the basis of novel verb tasks. The different treatments of real and novel verbs suggests that even adult subjects in such experiments rely on non-linguistic processes (i.e., cognitive and perceptual judgements) when using novel verbs.

These observations lead me to conclude that with our present state of knowledge about verb semantics it would be wise to use real verbs in experimental investigations of language components with significant semantic determinants. The added degree of control over prior exposure does not adequately compensate investigators for their inability to control the glosses that subjects might supply by themselves or our ignorance of the structural relations novel verbs bare to the semantic system of real verbs.

References

- Berko, J. (1958). The child's learning of English morphology. *Word* **14**, 150-177.
- Behrend, D. A. (1990). The development of verb concepts: Children's use of verbs to label familiar and novel events. *Child Development* **61**, 681-696.
- Braine, M. D. S., Brody, R. E., Fisch, S. M. & Weisberger, M. J. (1990). Can children use a verb without exposure to its argument structure? *Journal of Child Language* **17**, 313-342.
- Brooks, P. J. & Michael T. (1999). How children constrain their argument structure constructions. *Language* **75**, 720-738.
- Gollinkoff, R., Jacquet, R., Hirsh-Pasek, K. & Nandakumar, R. (1996). Lexical principles may underlie the learning of verbs. *Child Development* **67**, 3101-3119.
- Gropen, J., Pinker, S., Hollander, M., and Goldberg, R. (1991a). Affectedness and direct objects: The role of lexical semantics in the acquisition of verb argument structure. *Cognition* **41**, 153-195.
- (1991b). Syntax and semantics in the acquisition of locative verbs. *Journal of Child Language* **18**, 115-151.
- Maratsos, M., Gudeman, R., Gerard-Ngo, P., and DeHart, G. 1987. A study in novel word learning: The productivity of the causative. In B. MacWhinney (ed.), *Mechanisms of language acquisition*. Hillsdale, NJ: Lawrence Erlbaum.
- Pinker, S. (1989). *Learnability and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.
- Pinker, S., Lebeaux, D. S.; and Frost, L. A. (1987). Productivity and constraints in the acquisition of the passive. *Cognition* **26**, 195-267.

Novel Verb Tasks

Schwartz, R. (1988). Early action word acquisition in normal and language impaired children.

Applied Psycholinguistics 9, 111-122.