

Do Labels Guide Action Category Learning?

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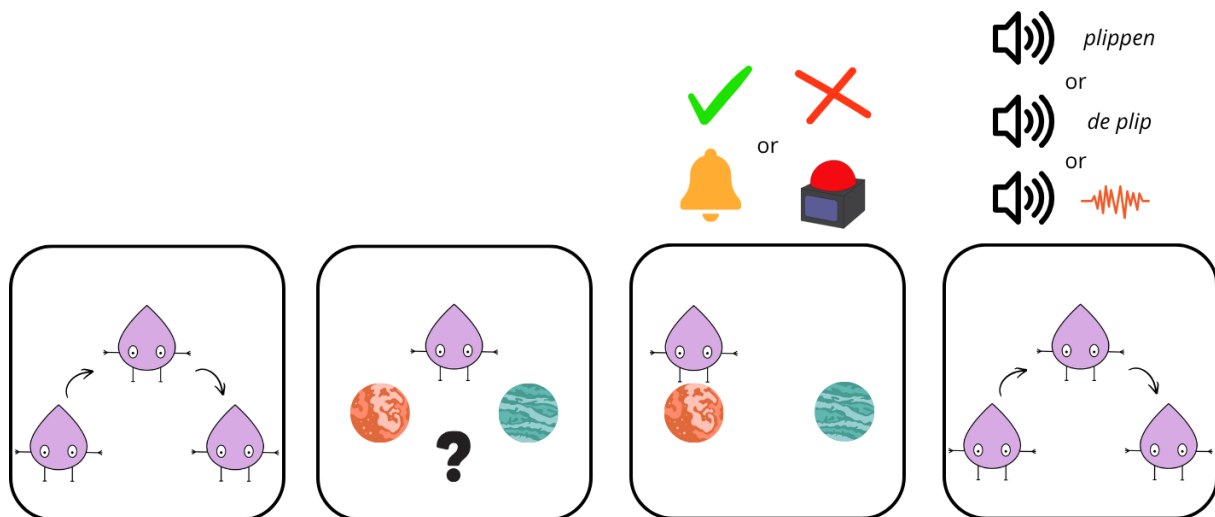
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Many previous studies using so-called ‘cueing paradigms’ show that linguistic cues (words, ‘labels’) facilitate the perception of and discrimination between object categories, as compared to cues that are non-linguistic in nature (e.g., environmental sounds) [1-2]. This facilitating effect of labelling is also reported in the domain of learning; verbal labels have been shown to enhance the acquisition of novel object [3], smell [4] and tactile pattern [5] categories. However, thus far the label advantage literature has focused almost exclusively on static, non-dynamic domains (e.g. objects). Whether verbal labels also facilitate the acquisition of dynamic categories – which are also abundantly present in our lives in the form of actions and events - remains largely unexplored. This study addresses this gap by investigating the effect of verbal labels on the acquisition of novel *action* categories. Specifically, we will be looking at atelic (non-goal oriented), intransitive action categories, solely defined by differences in kinematic movement. This type of action is void of goals, tools, patients, or other features that can provide top-down cognitive scaffolding for categorization [6]. This type of action therefore makes for an informative test case to see whether labels facilitate learning even when no top-down information is available. This would suggest that labels can function as autonomous top-down anchors rather than merely as amplifiers of existing top-down cognitive scaffolding.

We study the role of labels for novel action learning through an experiment in which participants (between participants, $N = 120$, native Dutch speakers) learn novel dynamic action categories, under different learning conditions (novel verb label, novel noun label, or auditory tone control). We compare sentenced framed novel verb and noun labels to see whether the grammatical class of the label differentially affects learning outcomes. The action categories in this experiment consist of clips of an alien who bounces across the screen in different ways. Bounce height was selected as the critical feature that distinguishes the two categories, after a pilot study on action feature saliency was conducted. The experiment consists of a learning phase (see Figure 1), in which the participants are familiarized and trained on the novel action categories with feedback and in the presence/absence of labels (verb or noun), and a testing phase, in which participants’ categorization accuracy is measured, *without* feedback and labels. Based on previous work, we predict that participants in both the verb and noun label learning conditions will show higher categorization accuracy scores than participants in the control condition. Second, we predict that participants in the verb label conditions will outperform participants in the noun label condition, given that verbs are semantically more compatible with the structure of the dynamic stimuli than nouns [7]. We have just initiated data collection and expect to have results by the summer of 2026.

Figure 1: Illustration of the learning phase.



References

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