

# Verbs link action to language

Why commenting on toddlers' actions is important for verb learning



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A parent and a toddler are playing with a train set – loading and unloading the cars, and traveling over bridges, through tunnels, and up and down hills. They stop at railroad crossings to let other trains pass, take turns pretending to be the conductor, and hand each other objects to load onto the cars. The parent describes in great detail what is happening, while the toddler names familiar objects and sporadically parrots what the parent is saying.

As this example suggests, the perception of action goals and the understanding and production of language are crucial for taking turns and collaborating, and for social interactions more generally. We know that talking with a toddler promotes language acquisition. But how does this process take place, and what does playtime have to do with it?

In my example, the action of loading and unloading the cars requires that the child understands the action goals. As he receives items, he needs to understand the purpose of his parent's actions. The perception of actions as being goal directed develops very early in life; indeed, the first signs of understanding a simple reaching and grasping

action appear when an infant starts to intentionally grasp an object. First-hand experience with actions seems to be crucial for processing the actions of others. Research in adults as well as infants has shown that the motor system of the brain is involved in linking action perception and production.

### **When infants observe an action**

We know that the brain's action observation network, of which the motor system is a part, responds when infants observe an action. This process is often called *simulation* because the motor system internally simulates the movements that are required to perform the action that is being observed. To put it simply, infants "use their hands" in their brains to understand what other people are doing.

The understanding children acquire early on of the significance of others' actions, and of other people's goals and intentions, form the basis for nonverbal and then verbal communication. This is particularly important for verb acquisition. Verbs, which describe actions, processes, and relationships, play a major role in social interactions and communication. Without verbs, we would have no way of communicating what is happening to us or others. This also means that through verbs, the two domains of action and language are linked to each other.

*"Infants 'use their hands' in their brains to understand what other people are doing."*

If we conceive of early language acquisition as a simple process of association, we can more easily understand how action understanding facilitates verb acquisition: When a toddler learns a new noun, she associates a new word with a particular object. Seeing a cat and hearing the parent say "cat" produces a link between what is seen and what is heard; word and object are linked in a process of associative learning.

Similarly, toddlers learn to link different types of action with a verb they have heard. Running, walking, and sneaking, for example, are types of movement; entering, exiting, and crossing indicate the direction of a movement. To associate a new verb with an action, the toddler needs to have a basic idea of what the action is about. Verb-learning studies have demonstrated that new verbs are learned more quickly when the action is named just before the toddler performs it.

### **Learning by doing**

To return to my initial example, something similar happens when the parent utters the verb "loading" just before the toddler loads an object onto the car: Hearing the word helps the child associate the action of loading with the new verb "loading." Research in our lab has also shown that new verbs are learned more effectively if the toddler is given an opportunity to perform the action instead of just watching someone else do it. Receiving information from two sources (action and language) rather than one promotes acquisition of a new verb.

*"Parents intuitively comment on the actions of their toddlers, it helps young brains to build connections between words and actions."*

Furthermore, toddlers are better able to predict a subsequent action if they first hear a familiar verb. Two-year-olds predict the outcome of an action more quickly if they have first heard the verb (e.g., “Look, I’ll show you how to draw”) than if they have not (e.g., “Look, I’ll show you something”). Once a verb has been acquired, it can be used to predict other people’s actions, which is of particular importance in social interactions.

Thus action processing and verb processing are not isolated developmental areas, but interrelated from early on. The motor system, which is important for action processing, may play a role in this interrelationship. Both adults and preschoolers show motor system activation in the brain when they hear action verbs. For instance, the areas in the brain that control the hands are activated when an individual hears the verb “pick.” So adults as well as preschoolers “use their hands” in their brains to grasp the meaning of hand-related verbs.

When parents intuitively comment on the actions of their toddlers, it helps young brains to build connections between words and actions and links brain areas that are involved in action and language processing, such as the auditory, visual, and motor systems. In the example of the train set, the parent’s comments on everything that is happening help the toddler’s brain to make connections between the action of loading and unloading train cars, hearing the new word “loading,” and ultimately uttering “loading” for the first time. It is apparent that talking to toddlers during playtime promotes language acquisition.