Argument Structure

One central challenge children face in learning syntax is determining the argument structure of verbs. An argument is a noun phrase that has a specific syntactic and semantic relation to a verb and that must be present (or implied) in any sentence containing that verb in order for the sentence to be well formed. The syntactic relationship is denoted by syntactic roles such as Subject and Object, and the semantic relationship by semantic roles such as Agent and Patient (entity that instigates an action) and Patient (entity that undergoes an action).

Argument structure is the specification of the number and types of arguments required for a verb in that structure to be well formed. For instance, an intransitive structure requires only one Subject argument (e.g., Elizabeth liked the vase because it experiences rather than instigates the liking). Most verbs appear in more than one argument structure.

The central debate surrounding the acquisition of argument structure, dating back to the late 1960s, concerns whether abstract knowledge underlying argument structure is innate (i.e., nativist) or gradually constructed based on patterns in the input (i.e., constructivist). Evidence comes from a wide variety of naturalistic and experimental studies assessing patterns in children's comprehension and production of argument structures. Much literature also focuses on how children retreat from argument structure over generalization errors such as Don't giggle me to mean don't make me giggle where giggle is used transitively instead of intransitively. Consensus over the last decade is that children have a weak abstract representation of argument structure as early as 2 years of age but that input-based learning is also clearly evident.

Nativist Position

The nativist position assumes that children are innately endowed with key knowledge that helps them break into the argument structure system: (1) syntactic categories such as noun and verb, (2) semantic roles such as Agent and Patient, (3) syntactic roles such as Subject and Object, and (4) default linking rules that specify the relationship between semantic roles and syntactic roles (e.g., Agent = Subject). However, nativist researchers differ in whether they believe children initially use semantics or syntax as building blocks to bootstrap themselves into a fully abstract and adulthood system of argument structure.

Under the semantic bootstrapping account, children first use their knowledge of the world to discern verb meanings (e.g., a pushing event typically involves an Agent who does the pushing and a Patient that gets pushed) and then use innate specified rules to link semantics to syntax (e.g., Agent = Subject and Patient = Object). They use default mappings like Agent = Subject to build their understanding of syntactic roles and eventually extend this knowledge to less typical mappings. The strongest evidence comes from experiments showing that children respect semantic classes of verbs in both their correct and erroneous productions of argument structure.

Under the syntactic bootstrapping account, children first attend to the number of arguments a verb has and the syntactic arrangement in which they appear (e.g., in The duck is goring the bunny, gorp requires a Subject and an Object). Children then use that syntactic information to bootstrap themselves into the semantics of the verb (e.g., gorp denotes a causative action like push). The strongest evidence comes from preferential-looking studies in which children initially hear a sentence like the one just mentioned while viewing a video in which two events occur simultaneously—here, a duck pushing a bunny up and down (i.e., a causative event) and the same duck and bunny in both circular motions (i.e., a noncausative event). When presented in the test phase with two videos, one for each of the two events, children prefer to look at the video that corresponds with the syntax of the sentence they heard.

Constructivist Position

The constructivist position, in contrast, assumes that children learn argument structure on the basis of generalizations from the input without the benefit of any innate knowledge other than general cognitive mechanisms. Children begin with verb-specific argument structures (e.g., the verb eat requires an eater and a thing eaten) and gradually generalize these to more abstract categories (e.g., eat is a transitive verb with an Agent Subject and a Patient Object). The generalization process eventually leads to verb-general representations of argument structure by around 3 years of age. The strongest evidence comes from numerous elicited production studies in which children who are taught a novel verb in one argument structure fail to reliably generalize it to other argument structures before age 3.

More recently, researchers have come to a compromise between the nativist and constructivist theories: that children do have weak abstract representations of argument structure as early as age 2 but also show clear effects of verb-specific knowledge such as stronger representations for verbs that are more frequent in the input. This fits well with the overall pattern that children show comprehension of argument structure earlier than they are able to produce it consistently and reliably. Research on argument structure acquisition in the past decade has focused on exploring the nature of weak argument structure representations and how they strengthen over time in interaction with lexical learning. The strongest evidence so far comes from priming studies where children show persistence in expecting or producing the same argument structure that they heard in one or more previous utterances. Computational modeling of children's input and subsequent productions is another promising avenue to contribute to this debate.

Most of the literature focuses on argument structure acquisition in English, where arguments are typically present in the input and where argument structure is indicated by word order. Other languages present challenges to both these assumptions. In many languages Subjects and Objects are frequently omitted, meaning that children apparently have far less evidence about which arguments are required for which verbs. How children map syntactic roles through case marking, verbal agreement, or animacy, in such languages, children have the extra problem of determining which cues to attend to, and in what balance, to assess argument structure.

See Also: Item-Based/Exemplar-Based Learning; Over-Generalization of Grammatical Constructions; Syntactic Bootstrapping; Syntactic Development: Construction Grammar Perspective; Syntactic Development: Generative Grammar Perspective; Syntactic/Structural Priming.

Further Readings


Aspect

Aspect is a core semantic notion that refers to the ways that events unfold in time. It manifests in language in two distinct, but closely related, ways: lexical aspect and grammatical aspect. Lexical aspect refers to the inherent event properties expressed by a predicate. In a well-known paper, Z. Vendelet laid out a taxonomy of lexical aspect types using three critical properties: whether the event described had a natural boundary point (telicity), involved dynamic change (stativity), or extended over time (durativity).

Lexical aspect is conveyed primarily through the open-class content words of a sentence. When children begin to produce the forms of grammatical aspect, they are highly influenced by these natural connections (see Table 1). By contrast, grammatical aspect refers to the temporal perspective a speaker takes on an event, such as whether one puts