Children's acquisition of relative clauses

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Structure of relative clauses

External syntax

(1)　　The *guy* we saw was Peter.
(2)　　I know the *guy* you are talking about.
(3)　　Peter gave the man we saw the keys.
(4)　　He lives in the same *house* where Peter lives.
(5)　　That's the *picture* I made.

Internal syntax

(1)　　The man who slept.
(2)　　The man I met.
(3)　　The man I gave the picture to.
(4)　　The man I talked to.
(5)　　The man whose dog chased the cat.

Experimental studies

(1) The dog that jumps over the fence bumps into the lion.

(2) The dog bumps into the lion that jumps over the fence.

Tavakolian (1977)

(1) This is the sugar that goes in there. [Nina 3;0]

(2) That's a picture I made. [Adam 3;0]

(3) The one I want [Abe 2;10]

(4) The one who laughed. [Abe 2;11]

Children's spontaneous REL-clauses

	Age range	Finite	Nonfinite
Adam	2;3-4;10	178	120
Sarah	2;3-5;1	32	36
Nina	1;11-3;4	62	71
Peter	1;9-3;2	25	44
Naomi	1;8-3;3	8	16
	1;9-5;1	305	287

Children's spontaneous REL-clauses

(1) *CHI: And here's a rabbit **that** I'm patting.   Nina 3;0
(2) *CHI: And there's the penguins **that** we saw.   Nina 3;1
(3) *CHI: Is that house **that**'s on fire?   Peter 2;10

(4) *FAT: No what did you eat?   Abe 3;6
     *CHI: Some apples **that** were sweet .
(5) *MOT: What are those?   Nina 3;2
     *CHI: Animals **that** are chasing that .
(6) *FAT: What lion face?   Abe 3;11
     *CHI: The lion face you were gonna draw.

Children's spontaneous REL-clauses

|		
(1)	That's doggy <u>turn around</u>.	Nina 1;11
(2)	This is my doggy <u>crys</u>.	Nina 2;0
(3)	That's a turtle <u>swim</u>.	Nina 2;2
(4)	Here's a mouse <u>go sleep</u>.	Nina 2;3
(5)	That's the roof <u>go on that home</u>.	Nina 2;4
(6)	That's the rabbit <u>fall off</u>.	Nina 2;4
(7)	There's a tape <u>go around right there</u>.	Peter 2;0
(8)	This is the fire engine <u>go 'whoo whoo'</u>.	Peter 2;6

Children's spontaneous REL-clauses

(1)	doggy <u>turn around</u>.	Nina 1;11
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(5)	the roof <u>go on that home</u>.	Nina 2;4
(6)	the rabbit <u>fall off</u>.	Nina 2;4
(7)	a tape <u>go around right there</u>.	Peter 2;0
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Children's spontaneous REL-clauses
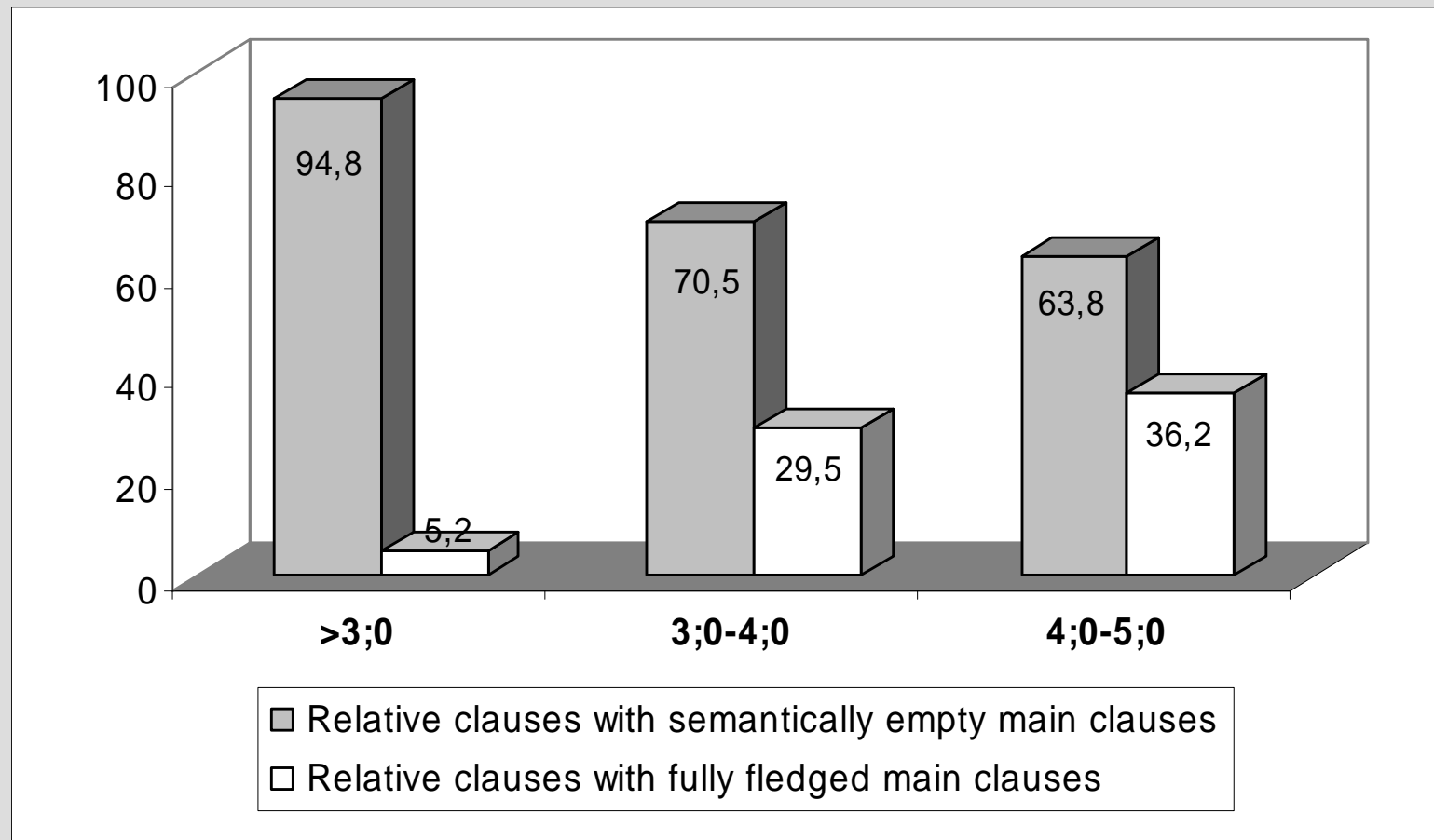
Diessel and Tomasello 2005

(1)   Der Mann, *der* mich gesehen hat.   SUBJ-relative

(2)   Der Mann, *den* ich gesehen habe.   OBJ-relative

(3)   Der Mann, *dem* ich das Buch gegeben habe.   IO-relative

(4)   Der Mann, *zu dem* ich gegangen bin.   ADV-relative

(5)   Der Mann, *dessen* Hund mich gebissen hat.   GEN-relative

(6)   The man who __ met the woman.   SUBJ-relative

(7)   The woman who the man met __ .   OBJ-relative

(8)   The boy who the girl gave the ball to __.   IO-relative

(9)   The girl who the boy played with __.   ADV-relative

(10)   The man whose cat caught a mouse.   GEN-relative

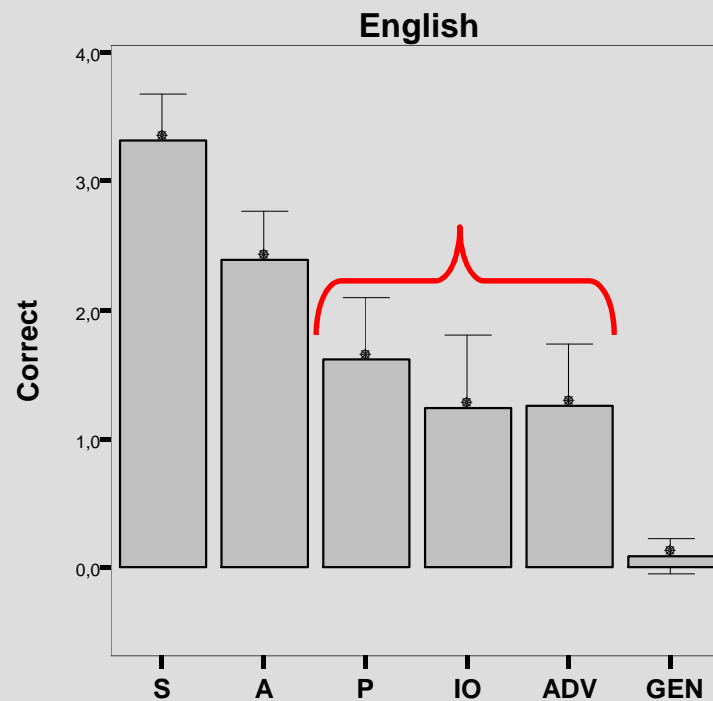# Method
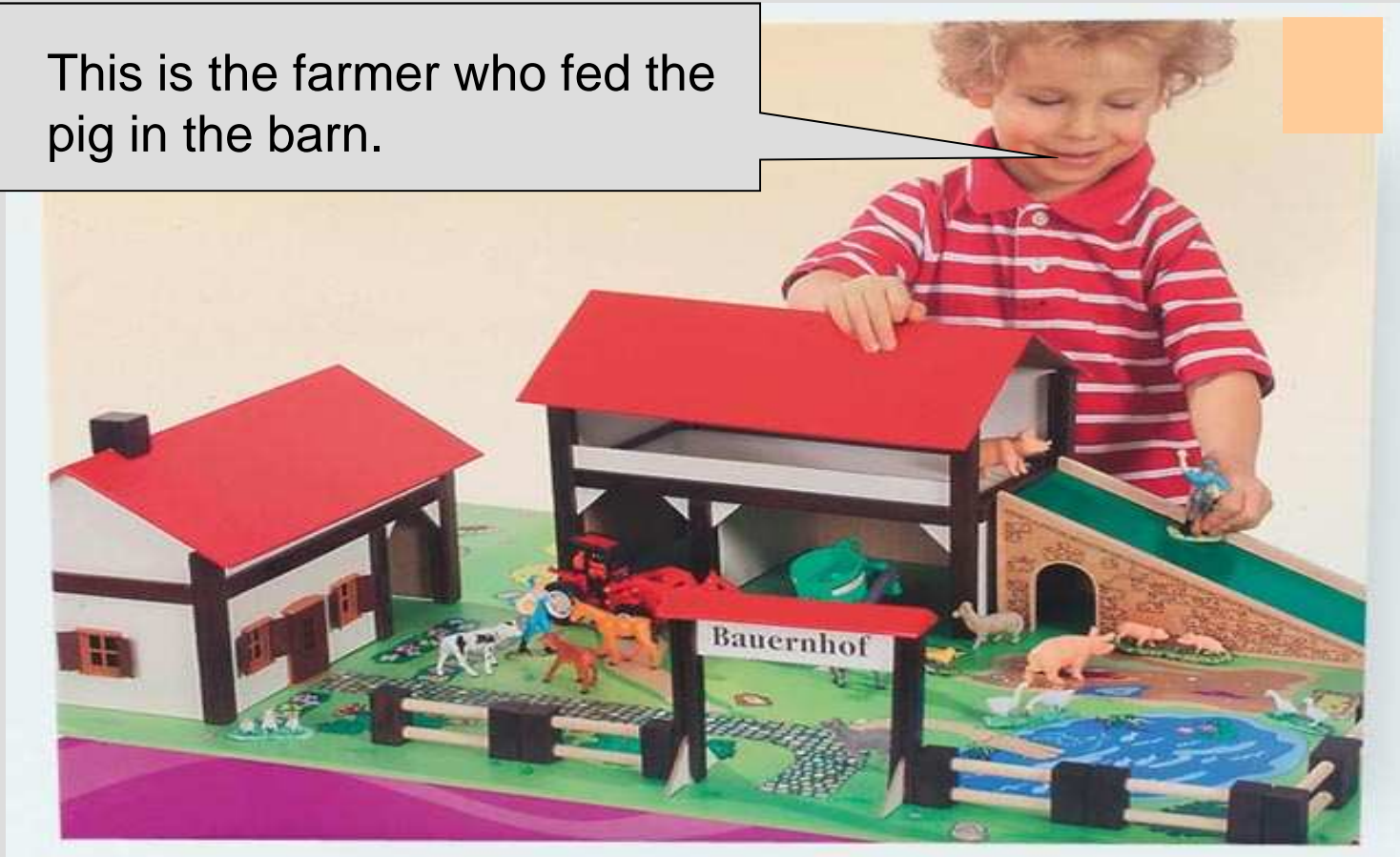
Subjects: 4-5 year-old English- and German-speaking children

Results

S	intrans. subj.
A	trans. subj.
P	direct obj.
IO	indirect obj.
ADV	adverbial
GEN	genitive

English

P vs. IO	$p > 0.173$
P vs. ADV	$p > 0.169$

German
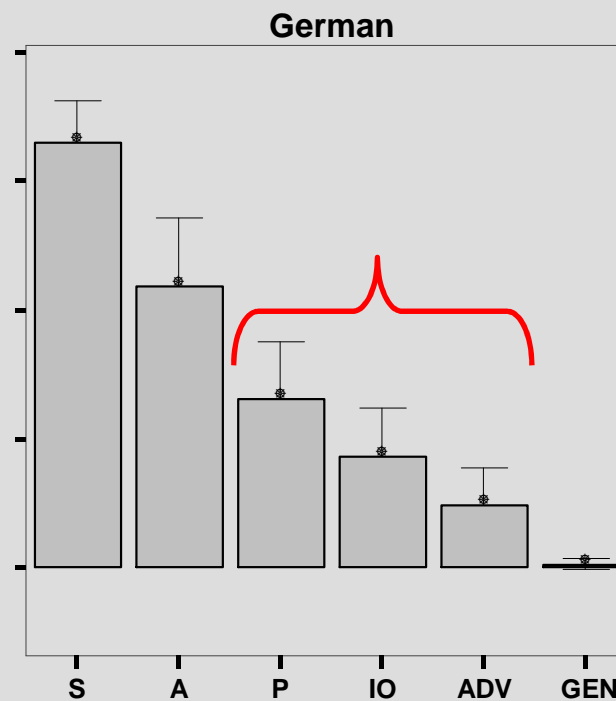
P vs. IO	$p > 0.061$
P vs. ADV	$p < 0.001$

Error analysis

(1) Test item: This is the girl **who** the boy teased at school this morning.
   CHILD: This is the girl **who** teased … the boy … at school this
               morning.

(2) Test item: Da ist der Mann, **den** das Mädchen im Stall gesehen hat.
   CHILD: Da ist der Mann, **der** das Mädchen im Stall gesehen hat.

(3) This is the girl **who** bor/ Peter borrowed a football from.

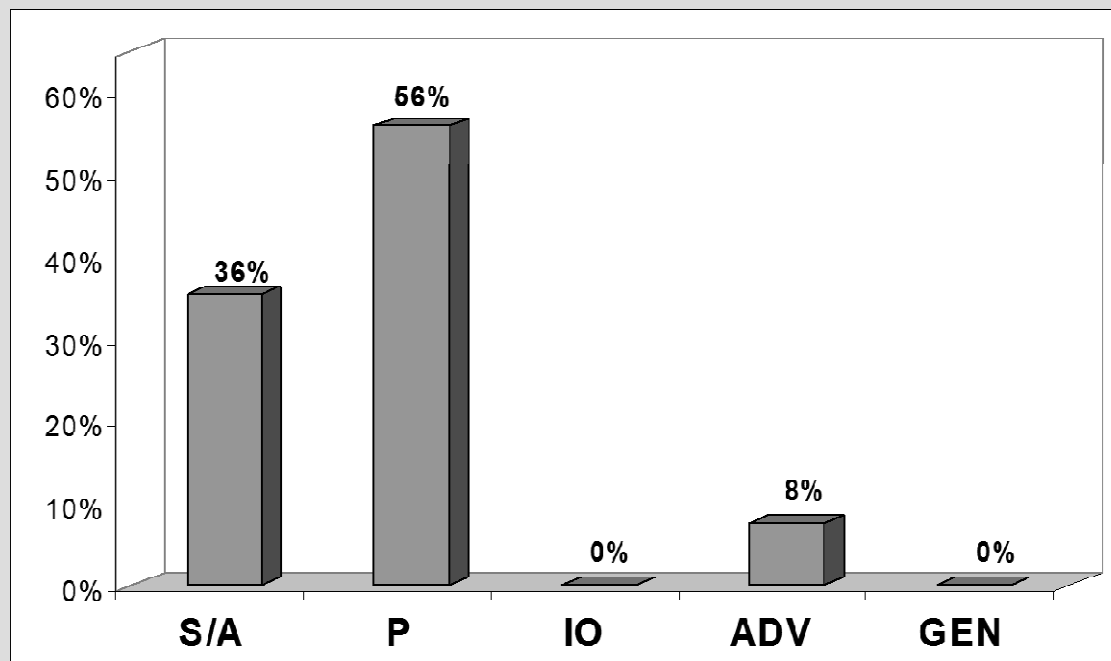(4) Da ist der Junge, **der/ dem** Paul … die Mütze weggenommen hat.

The conversion errors do not arise from lack of grammatical knowledge.

Hypothesis: Subject relatives are easier to activate than other types of relative clauses.

Subject relatives

One factor that determines the ease of activation is frequency (Bybee 2006; Elman 2004).

Proportion of different structural types of relative clauses in the ambient language (Diessel 2004)

Subject relatives

Hypothesis: Subject relatives are easy to activate because they are similar to ordinary main clauses (Diessel & Tomasello 2005).

(1) The man [agent] who opened the door [patient].   SUBJ

(2) The cat [patient] the dog [agent] chased around the garden.   OBJ

(3) The doctor [goal] the patient [agent] went to last night.   ADV

Object- and adverbial REL

the N [**who** saw NP]   subject
the N [**who NP** saw]   direct object
the N [**who NP** gave NP to]   indirect object
the N [**who NP** played with]   adverbial
the N [[**whose N**] chased NP]   genitive

der Mann, **der** …   subject
der Mann, **den** …   direct object
der Mann, **dem**   indirect object
der Mann, **mit/von dem** ….   adverbial
der Mann, **dessen** N …   genitive

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Genitive REL

(1) This is the man whose dog bit me.

Genitive relatives are rare (or even absent) in the ambient language.

Indirect object relatives are also rare.

Genitive relatives caused more problems than indirect object relatives because they are very different from all other types of relative clauses, whereas indirect object relatives can easily be formed in analogy to subject and direct object relatives.

Summary

❑   Subject relatives caused few problems because they are frequent and similar to simple sentences.

❑   English direct object, indirect object, and adverbial relatives caused basically the same amount of errors because they have the same word order.

❑   Indirect object relatives caused relatively few problems because they are similar to direct object relatives.

❑   Genitive relatives and German adverbial relatives caused great problems because they are dissimilar from other relative clauses.

Summary

Why is similarity so important?

Similarity is important because relative clauses are grammatical constructions (i.e. form-function pairings) that are related to each other in an associative network like lexical expressions.
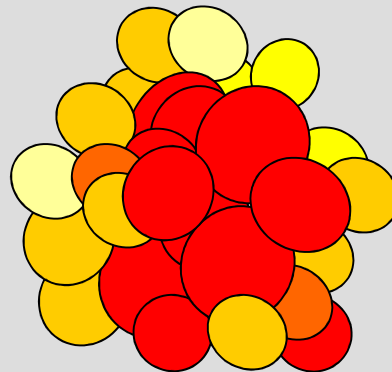
Network of relative clauses

SVO sentences

Network of relative clauses

SVO sentences

Network of relative clauses

Subject relatives

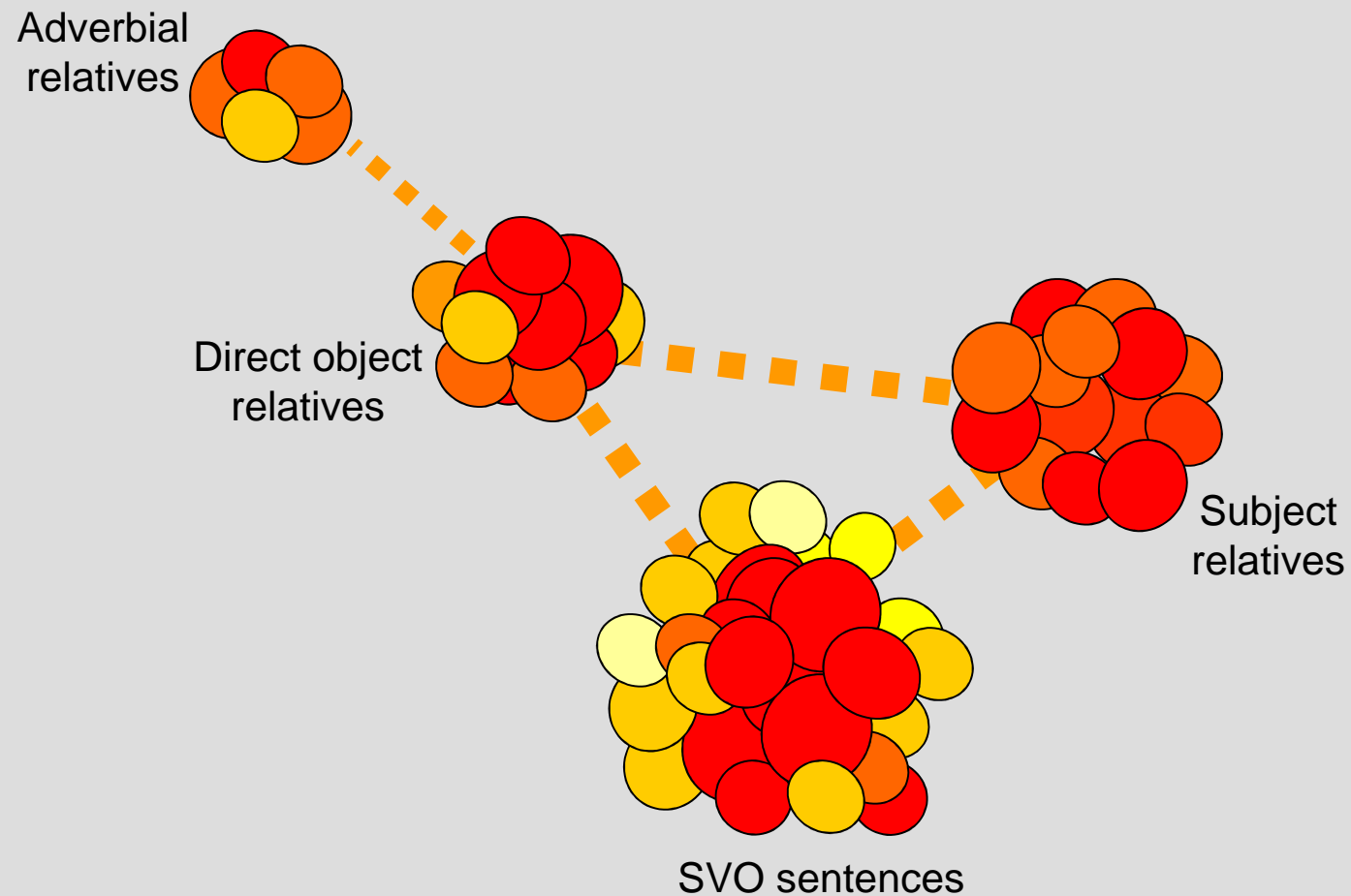SVO sentences

Network of relative clauses

Direct object relatives

Subject relatives

SVO sentences

Network of relative clauses

Adverbial relatives

Direct object relatives

Subject relatives

SVO sentences

Network of relative clauses

Adverbial relatives

Indirect object relatives

Direct object relatives

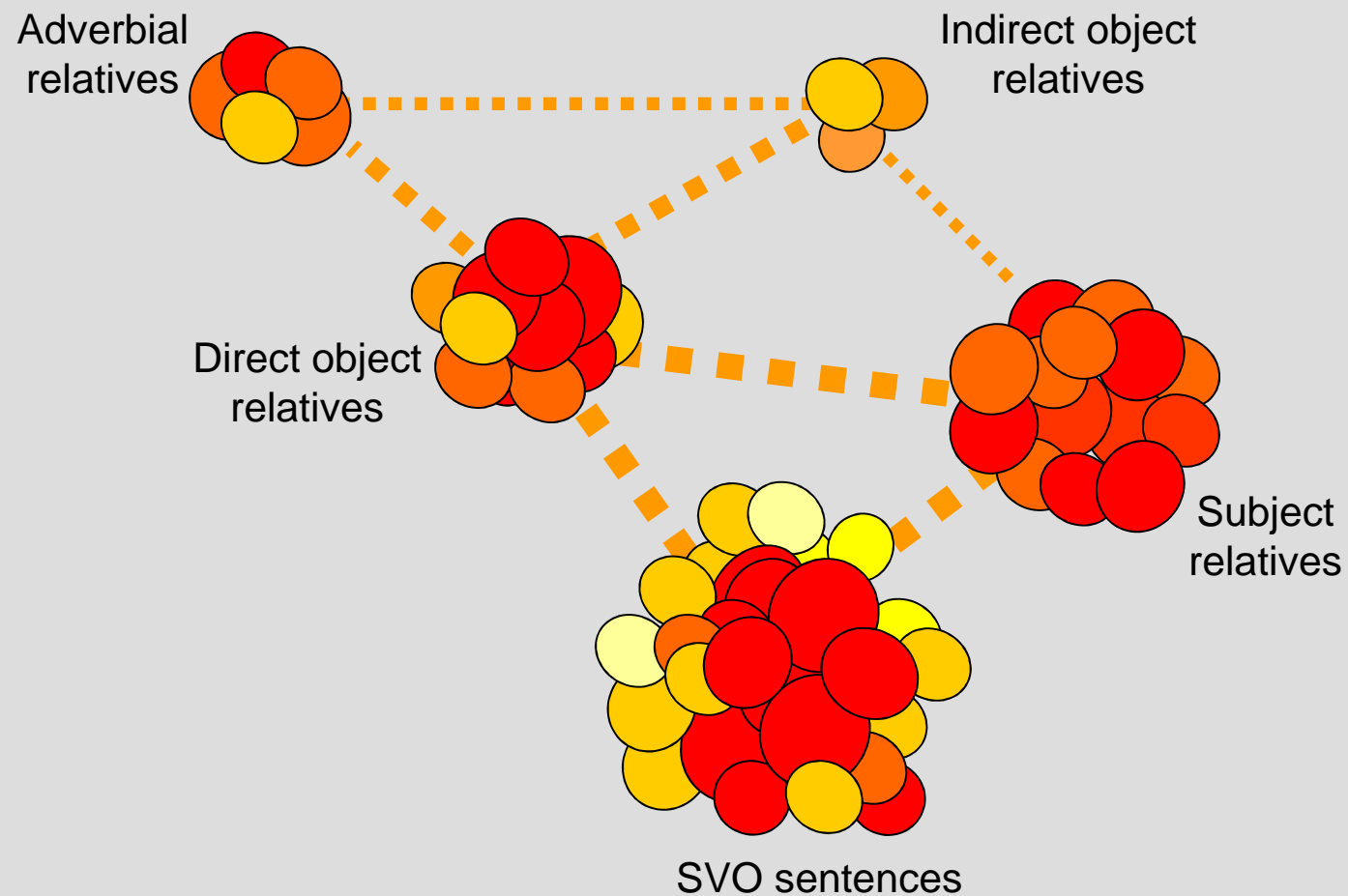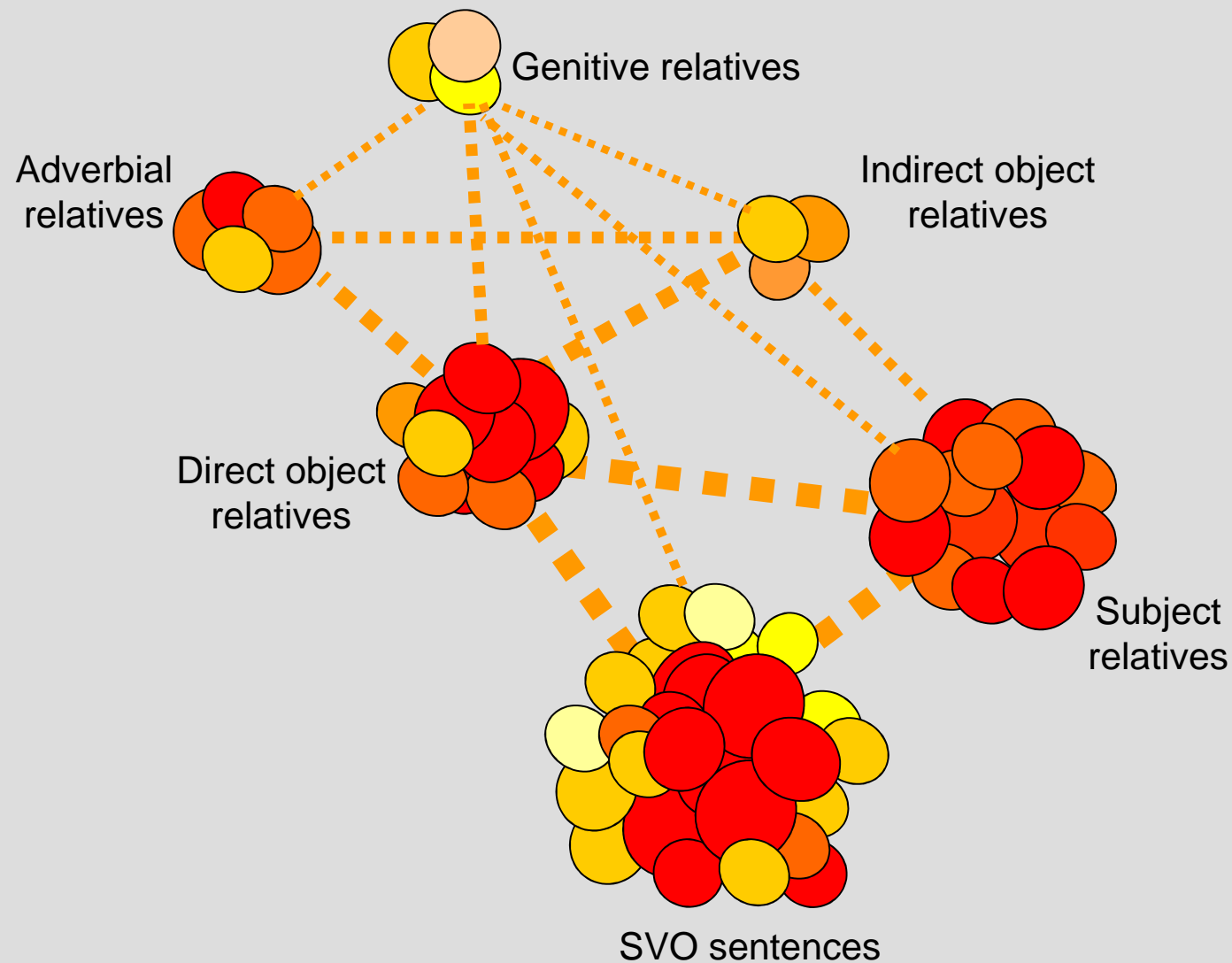Subject relatives

SVO sentences
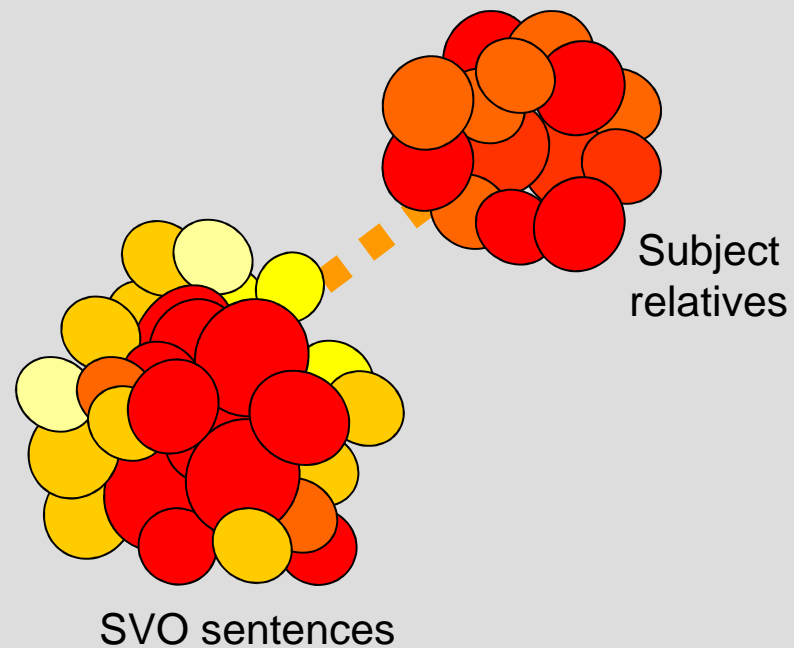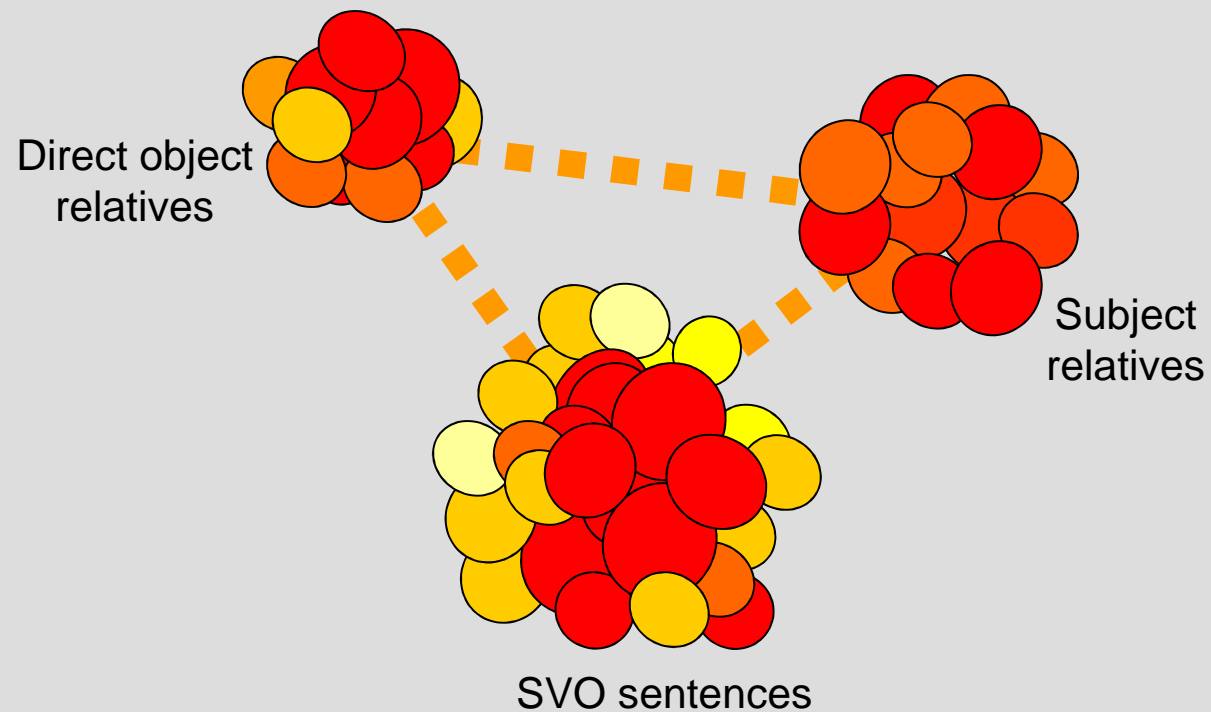
Network of relative clauses

Connectionist simulation

Fitz, H. & Chang, F. 2008. The role of the input in a connectionist model of the accessibility hierarchy in development. *Proceedings of the 32nd Boston University Conference on Language Development*, 120-131. Somerville, MA: Cascadilla Press.

Conclusion

In traditional grammar, linguistic productivity is based on rules that are similar to mathematical equations.

But research on the acquisition of inflectional morphology suggests that linguistic productivity is based on associations that are shaped by frequency and similarity.

The current study has shown that the approach can be extended to syntax.

Grammar consists of a network of constructions that is shaped by the frequency and similarity of its components.

Merry Christmas