Tamil Children's Comprehension of Recursive Phrases: Evidence from Possessives, Locatives and Relativized sentences

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The current research investigated Tamil children's comprehension of recursive possessives, recursive locatives and relativized sentences in order to determine evidence for a specific developmental path leading to adult-like understanding of indirect recursion. Previous research on children's acquisition of recursion in English and other languages supports a two-step acquisition path (Roeper, 2011; Fuchimori 2010; Pérez-Leroux et al. 2012 and others): (1) Direct Recursion with a conjunctive interpretation, via a simple Merge operation and (2) Indirect Recursion, i.e., iterative embedding of one phrasal category inside another of the same type. The evidence, attested for possessives, locatives/adpositions, relative clauses etc., show that children < 6 have difficulties going beyond single recursives (e.g., *Tom's dog*; *The apple on the plate*) and misinterpret 2-part (and 3-part and 4-part) recursive phrases and relativized sentences as conjunctives (e.g., *Tom's friend's dog* is interpreted as "Tom's dog and his friend's dog", *The apple on the plate under the table* as "The apple on the plate and the apple under the table" and *The dog chased the horse that jumped over the fence* as "The dog chased the horse and jumped over the fence").

Tamil is a consistently left-branching, SOV-language with agglutinative morphology, free word-order (with rightward and leftward scrambling) and complex kinship terminology. The participants were twenty-six Tamil children in Chennai, India (Group 1(< 5): N=12; Mean-Age= 3;7; Group 2(> 5): N=14; Mean-Age= 6;6). Picture-cum-story tasks (in Tamil) were used to assess their comprehension of 1 to 4-part possessives (see Fig. 1; Examples 1a-d) and 1-2 part locative phrases, which involve relativization (2a-b). A sentence-picture matching task (Fig. 2) was used to assess comprehension of relativized sentences (3).

The results of Repeated Measures ANOVA revealed no significant interactions between Age-Group (< 5; > 5) and (i)Possessive-Recursion-Type (Levels 1 to 4), (ii) Locative Recursion Type (Levels 1 and 2) and (ii)Relativized-Sentence Interpretation Type (Relative clause; Coordinate-clause) respectively. Both age-groups were equally successful in understanding indirect recursion in possessives (see Fig. 3) and locatives (Mean Proportion: Group 1= 0.91; Group 2 = 0.94). For relativized sentences, both groups performed similarly, interpreting some correctly (Mean Proportion: Group 1= 0.48; Group 2 = 0.55), and misinterpreting some as coordinatives (Group 1 = 0.32; Group 2 = 0.39). Significant Main-Effects was attested only for Possessive-Recursive Type ($F_{1.77,42.56} = 12.056$, *p<.000, Partial Eta Squared=.334, power=.987). Pairwise comparisons revealed significantly greater accuracy for single and two-part possessives vis-à-vis four-part possessives (but not 3-part possessives), suggesting that children's relative difficulty with 4-part possessives may be due to working-memory constraints.

The early emergence of indirect-recursion in possessives and locatives in Tamil children may stem from differences in branching directionality, morphological form-function mapping, and kinship terminology. The children's misinterpretations of relativized sentences as coordinatives may stem from their being garden-pathed because of the non-scrambled (SOV) word-order of the target sentences. While further research involving relativized sentences where the object containing the relative clause is scrambled past the subject (see 4) is needed, the children's success on recursive locatives, which involve relativization, supports early emergence of indirect-recursion in relative clauses.

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Fig. 1: Sample Picture for recursive possessives

Fig 2: Sample Sentence-Picture Matching Task

(1) Sample Comprehnsion items: Recursive possessives

a. Level 1-Poss (4 trials) : Balu-(v)-ooDu balloon enna niram?
Balu-GEN balloon what color
'What is the color of Balu's balloon'

b. Level 2-Poss (8 trials): Balu-(v)-ooDu akka-(v)-ooDu balloon enna niram?
Balu-GEN elder sister-GEN balloon what color
'What is the color of Balu's elder sister's balloon'

c. Level 3-Poss (4 trials): Kavya(v)-ooDu tambiooDu pirenDooDu balloon enna niram?
'What is the color of Kavya's younger brother's friend's balloon?

d. Level 4 -Poss (2 trials) Asha(v)-ooDu tambiooDu pirenDooDu naayooDu balloon enna niram?
'What is the color of Asha's younger brother's friend's dog's balloon?'

(2) Sample Comprehension items: Recursive locatives (require relativization)

a. Level 1: Locative (3 trials)
kuLatt-ile iru-kkir-a mudalai-ai kaami
pond-LOC be-PRES-RP crocodile-ACC Show(IMP)
'Show me/point to the crocodile in the pond' (Literally: Show me the crocodile that is in the pond).

b. Level 2: Locative (5 trials)
kuLatt-ile iru-kkir-a mudalai meela iru-kkir-a kurang-ai kami
pond-LOC be-PRES-RP crocodile on be-PRES-RP monkey show(IMP)
'Show me the monkey on the crocodile in the pond' (Literally: Show me the monkey that is on the crocodile that is in the pond)

(3) Sample Relativized sentence (unmarked SOV word order; relative clause is inside the Object NP) (7 trials)
maaDu [[veeli taanDi gudi-cc-a] naay-ai] torattittu
Cow-NOM fence cross-VBP jump-PAST-RP dog-ACC chase-PAST.3SN
'The cow chased the dog that jumped over the fence'

(4) Relativized sentence (Scrambled word order: OSV)
[[veeli taanD-i gudi-cc-a] naay-ai] maaDu torattittu
fence cross-VBP jump-PAST-RP dog-ACC cow-NOM chase-PAST-3SN
'The cow chased the dog that jumped over the fence'

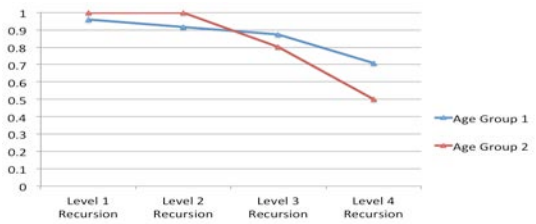

Fig. 3: Mean proportion of target (correct) responses given by the Tamil children in Group 1 (< 5 years) & Group 2 (> 5 years) for each Possessive Recursion Type.