

Verb Agreement in Hindi and its Acquisition¹

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1. Introduction

The paper explores the theoretical implications of an elicited production study of acquisition of Case marking in Hindi spoken in the Delhi region.² The results of this study indicate that while children as young as 3 years and 5 months³ make no errors in verb agreement with an ergative case-marked subject, verb agreement errors in the context of nominative subjects yielded surprising results. We found that these errors may be split, with the lower auxiliary verbs showing agreement with the case-marked object and the higher with the nominative subjects. We describe this children's divergent use both in terms of adherence to a universal condition and partial or incomplete adherence to a language specific condition whereby agreement with an overtly case-marked nominal is not allowed on the verbal constituents.

The paper is organized as follows: Section 2 provides a brief description of the psycholinguistic experiment and the methodology employed for the study of the acquisition of Hindi case and agreement by children growing up in standard Hindi speaking households, followed by the findings for the use of case by children. Section 3 discusses the verb/auxiliary phi-feature agreement phenomenon as seen in the adult grammar of Hindi, and the combination of conditions of transitivity and temporal aspect that govern it. Section 4 discusses in some detail the findings for verb agreement in the experiment based on observed patterns in children's utterances. In Section 5, we suggest an analysis to account for the weaknesses in the developing grammar keeping the structural implications of the adult grammar as background, and in Section 6, we conclude the paper.

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³ Henceforth age is represented as Y;MM. For example, 3 years 5 months as 3;5.

2. The Study: Acquisition of Hindi Case Marking⁴

The study consisted of an elicited production task with pairs of pictures for 15 (+2 practice items) verbs, with the intention of eliciting full definite noun phrases, with nominative, ergative, accusative/dative, instrumental and genitive cases. Conducted in the Delhi region with 21 children aged between 3;5 and 5;11 (10 boys and 11 girls), the study comprised of pictures for Transitive and Ditransitive predicates, with easily recognizable human characters and inanimate items for Subjects and Objects. All the children in the study were from Hindi speaking households where the primary language spoken by parents/caregivers was Hindi.

(1) List of Verbs for the study

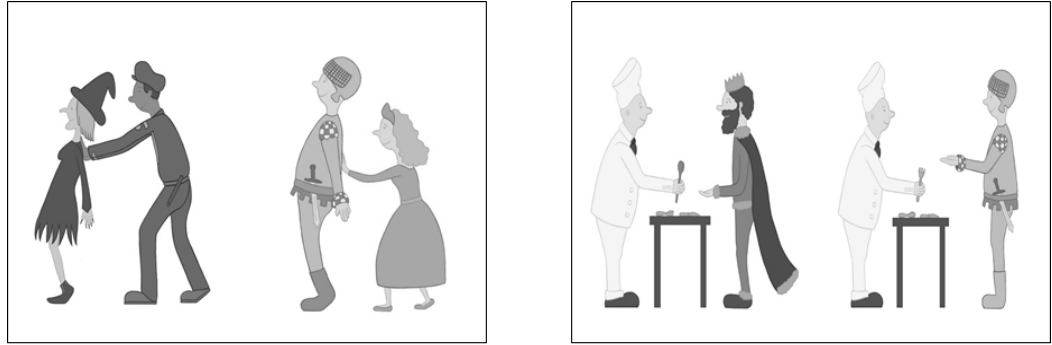
		Simple Predicates	Complex Predicates
V_t	Nom-Acc	1. <i>khiNc</i> (pull) 2. <i>nehlaa</i> (bathe)	1. <i>dhanyavaad keh</i> (thank) 2. <i>bye kar</i> (wave) 3. <i>dhakkaa de</i> (push) 4. <i>gale lagaa</i> (hug) 5. <i>kiss kar</i> (kiss) 6. <i>gudgudi kar</i> (tickle)
V_t	Nom-Gen	-	1. <i>madad kar</i> (help) 2. <i>piichaa kar</i> (follow)
V_t	Nom-Soc	-	1. <i>haath milaa</i> (shake-hand)
V_{dt}	Nom-Dat-Acc(Null)	1. <i>likh</i> (write) 2. <i>dikhaa</i> (show) 3. <i>de</i> (give) 4. <i>bhej</i> (send)	

The table above lists the verbs included, alongside the predicate structures for the respective verbs. For each verb, two pictures with the same action but different characters were shown to the children and they were encouraged to talk about the events in both the pictures in complete sentences, using full definite noun phrases. The use of different characters was necessary to avoid argument omissions in the children's responses. Each of these target sentences were elicited in two rounds: in one round the children described the ongoing event in the progressive aspect; the second round comprised of the children talking to a puppet, telling him/her about what had earlier happened in the pictures. If children were unable to respond in the required complete sentence, which could have been due to incomprehension of the event in the picture, or a novel complex predicate, cues were provided to prompt the appropriate response. Much care was taken that these cues did not prime the case forms that the study aimed to elicit by omitting the arguments and or verb forms as they would appear in the context⁵. Below are pictures from the task for the verbs 'push' and 'give'.

⁴ This study was part of a cross linguistic research, the design/tools for which were based on the work done in COST Action IS0804 "Language Impairment in a Multilingual Society: Linguistic Patterns and the road to Assessment" (www.bi-sli.org)

⁵ For instance, the following was the cue provided to the child for pictures of the verb 'push':
ye tasviir dhakkaa dene ke baare me hE

(2) Pictures for 'push' and 'give'



Since all the images used for the task were of an ongoing event, as can be seen in pictures for 'push' and 'give' in (2), children naturally tended to describe the event in the progressive aspect repeatedly. The second round of elicitation was intended to encourage the children to use the perfective aspect, by narration to a puppet, who was asleep, and who now insisted on being told 'what happened'. Repeated attempts were made to switch the children's narration to the perfective aspect, which sometimes also included prompting with the perfective form of the verb. The objective was to obtain utterances with an ergative marked subject, which appear in the perfective aspect of transitive clauses in Hindi.

2.1 The use of Morphological Case by children

Looking at the children's use of morphological case markers on nominal phrases in the targeted predicate structures, we observed a very high accuracy in the use of all case forms. We briefly discuss below these findings for the use of different case markers that this study aimed to capture.

With the children's preference to use the progressive aspect, it was predicted during the course of the experiment that they would display a large number of ergative marking omissions in their use of perfective aspect. This however was not the case, as children were seen to use the ergative marker on the subject of a perfective aspect construction with ease and accuracy. Of the 580 perfective responses with overt subjects, there were only 15 instances (approximately 2.5%) by 6 children where the ergative marker on the subject was omitted. A perusal of the conversation around these omissions leads us to attribute each of these to performance, owing to a difficulty in switching the narrative from the progressive to the perfective aspect. The following utterances instantiate the correct use of ergative marked subjects in the perfective aspect for a simple predicate (3) and a complex predicate (4).

(3) laRke ko aunty **ne** khiiNcaa (AG1:3;7)
 boy-OBL. ACC. aunty ERG. pull-PERF.
 M.SG. F.SG. M.SG.
 'The aunty pulled the boy'

this picture push give-INFI GEN. about LOC. Be-PRES.
 'This picture is about pushing'

- (4) cook **ne** ek laRkii kaa piichaa kiyaa thaa (TA:4;7)
 cook ERG. ne girl GEN. follow do-PERF. be-PST.M.SG
 M.SG. F.SG. M.SG. M.SG. 3P.M.SG.
 ‘The queen followed the soldier’

This finding confirms Narasimhan’s (2005) results in which children were found to be sensitive to the role of agency and aspectual conditions in their use of split-ergative case-marking. Moreover, her finding that children do not over-extend the *-ne* ergative marker to agents of transitive constructions in non-perfective contexts is corroborated by our study as well. There were 596 utterances in the non-perfective aspect with a non-omitted subject, and each of these carried a null case marking on them, as required in the adult grammar of Hindi.

Similarly, there was very high accuracy with respect to the use of overt *-ko* marking on indirect objects (5), the null accusative direct objects (5) and the bare use of the nominal in complex predicates (6).

- (5) raajkumaar ne doctor **ko** ghaRii dii (HA:4;7)
 prince ERG. doctor ACC. watch give-PERF.
 M.SG. M.SG. F.SG. F.SG.
 ‘The prince gave a watch to the doctor’

- (6) cook ne raanii **ko** kiss kiyaa (HA:4;7)
 cook ERG. queen ACC. kiss do-PERF.
 M.SG. F.SG. M.SG. M.SG.
 ‘The cook kissed the queen’

There was approximately 94% accuracy in the use of *-ko* marking on indirect objects (out of 404 overt indirect objects in the children’s responses), almost a 99% accuracy for null accusative direct objects (out of 413 overt direct objects), and 93% accuracy in *-ko* marking on objects in transitive predicates (out of 560 overt objects). Each of the errors in these categories is safely presumed to be the result of reasons other than a shortfall in the children’s application of the rules governing case in their grammar.⁶ Limiting the discussion of the children’s use of these case markers to these bare facts, we emphasize that children have attained the full adult Hindi competency by the age of 3, for the use of morphological case markers and assignment. We discuss this adult grammar of Hindi in the next section.

3. Verb Agreement in the adult grammar of Hindi

The noun class system of Hindi assigns a masculine or feminine gender to each noun in the lexicon and has a binary number distinction of singular and plural features in the

⁶ The errors in the use of the dative *-ko* on indirect objects in ditransitives are all in the predicates for ‘write’ and ‘send’, in each of which there is an alternate assignment of Beneficiary theta role to the argument, instead of Theme role. The former of these takes a different morphological case than the latter. The errors in the *-ko* marking on objects in transitive predicates can be attributed to either of the following: wrong theta role assignment, or the use of an unfamiliar complex predicate for the first time by the child.

grammar. These features manifest in the form of an inflectional agreement system that shows up on various grammatical categories such as adjectives, the possessive marker and verb categories, the last of which is what this study focuses on. The main verb participles in their future, imperfective and perfective forms, progressive auxiliaries, mood auxiliaries and the verbal head of an N+V complex predicate show inflection for agreement with a nominal in the clause. This agreement is subject to a combination of transitivity and aspect of the clause in Hindi, which is more specifically an aspectual-split in the agreement paradigm, resulting in agreement with the highest non-overtly case-marked nominal.

In the imperfective aspect,⁷ as seen in (7) and (8), the main verb is in its bare form, the progressive auxiliary agrees with the subject in gender and number, and the present auxiliary as well agrees in person and number with the subject.

(7)	Ram	kitaab	paRh	rahaa	hE
	Ram	book	read	PROG.	be-PRES.
	M.SG.	F.SG.		M.SG.	3P.SG.
	‘Ram is reading a book’				

(8)	mEN	axbaar	paRh	rahi	huuN
	I	newspaper	read	PROG.	Be-PRES.
	F.SG.	M.SG.		F.SG.	1P.SG.
	‘I am reading the newspaper’				

The same tense and aspect conditions will trigger the same agreement pattern in complex predicates and ditransitive predicates.

In the Perfective aspect in Hindi, on the other hand, gender and number agreement on the perfective participle is with the object, but the present tense auxiliary in this case does not seem to agree in person at all with the present nominals in the clause, as can be seen in (9) and (10).

(9)	Ram	ne	kitaab	paRhi	hE
	Ram	ERG.	book	read-PERF.	be-PRES.
	M.SG.		F.SG.	F.SG.	3P.SG.
	‘Ram has read the book.’				

(10)	mE	ne	axbaar	paRhaa	hE
	I	ERG.	Newspaper	read-PERF.	be-PRES.
	F.SG.		M.SG.	M.SG.	3P.SG.
	‘I have read the newspaper’				

There is, however, an additional difference in the agreement system in the past tense. In the progressive past, the tense auxiliary will agree in number and gender only. The progressive auxiliary and the main verb behave the same way as in the progressive present.

⁷ We limit the use of the term ‘imperfective’ to ‘progressive’ in this paper.

- (11) Ram kitaab paRh rahaa thaa
 Ram book read PROG. be-PAST.
 M.SG. F.SG. M.SG. 3P.M.SG.
 ‘Ram was reading the book’
- (12) tum axbaar paRh rahii thii
 you newspaper read PROG. be-PAST
 2P. M.SG. F. F.SG.
 ‘You (F) were reading the newspaper’

In the perfective past, the perfective participle agrees with the object for gender and number.

- (13) Ram ne kitaab paRhii thii
 Ram ERG. book read-PERF. be-PAST
 M.SG. F.SG. F.SG. 3P.F.SG.
 ‘Ram had read the book’
- (14) tum ne kitaab paRhii thii
 you ERG. book read-PERF. be-PAST.
 2P. F.SG. F.SG. 3P.F.SG.
 ‘You had read the book’

An important rule that is seen to operate in the adult grammar of Hindi is that which limits the scope of person agreement to the subject. Across all tenses and aspects, it is only the tense auxiliary of Hindi that shows agreement for person (and number), whereas perfective participles and the progressive *rah-* auxiliary agrees only for gender and number. We resort to the putative universal of Baker (2008) Structural Condition on Person Agreement (SCOPA) to discuss and explain the operation of this limitation on person agreement.

(15) Structural Condition on Person Agreement

A functional category F can bear the features +1 or +2 if and only if a projection of F merges with an NP that has that feature, and F is taken as the label for the resulting phrase.

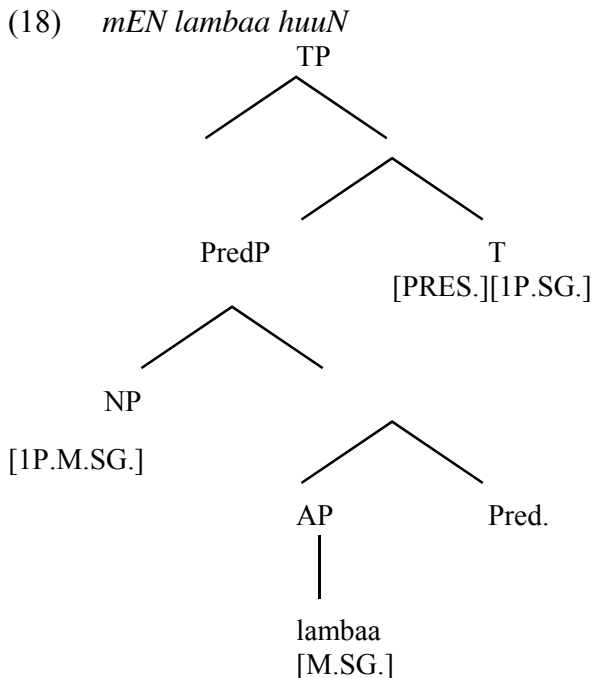
The central intuition underlying SCOPA is that the person agreement must always involve a SPEC-head configuration outside the vP, and where such configurations are not achieved agreement is always partial, based on number and gender alone. Baker (2008, 2011) discusses these restrictions on person agreement with cross linguistic evidence for partial agreement on predicate adjectives (Swahili, Hindi, Spanish, Arabic, Mayali and Tariana), partial agreement with *wh*-expressions in [Spec,CP] (nonstandard English), the impossibility of number and gender/animacy agreement with the first person theme argument in double-object constructions in structures like ‘She sent me to him’ (Nahuatl, Southern Tiwa and Shambala), the impossible long distance agreement with a first

person object in a gerund construction (Lokaa), and Dative subject constructions with first or second person objects (Chicasaw and Icelandic).

In Hindi, just as SCOPA predicts, there is partial agreement on predicate adjectives, as seen in (16) and (17), where the *-aa* ending adjective agrees in gender and number with the subject, whereas the copula agrees in gender, number as well as person with the subject. This partial agreement follows from Baker's (2008) analysis of adjectival predication, whereby the subject is merged to [Spec,PredP], which disallows licencing of person agreement. The derivation of (17) would then look like that in (18).

- (16) tum sab laRke lambe ho
 you all boys-OBL. tall be-PRES.
 M.PL. M.PL. 2P.PL.
 'All you boys are tall'

- (17) mEN lambaa huuN
 I tall be-PRES.
 (M.SG.) M.SG. 1P.SG.
 'I (M) am tall'



Looking back to the examples of agreement with non-subject nominal phrases that we have described in this section, it is obvious that in the adult grammar of Hindi speakers, SCOPA would always be respected as direct/indirect objects or the nominal parts of a NV complex predicate can never raise to [Spec,TP].⁸ The other probable probe *v* lacks an

⁸ Double object constructions are not exactly the ideal contexts to show that SCOPA holds for Hindi, for the simple reason that either of a theme direct object or a goal indirect object will necessarily be marked for morphological case if it is a first or second person argument. Such differential object marking, that is,

EPP feature, so 1P and 2P agreement will never be allowed in this part of the structure. As a consequence, when the internal arguments (IA) become accessible for agreement, they only trigger agreement for number and gender and never person on the verbal perfective/imperfective participle forms of the verb⁹.

These restrictions on person agreement then lead the diagnosis that the PROG auxiliary originates quite low in the structure and never raises to T. Consequently we never expect it to show agreement for person. The tense auxiliary though must raise to at least the vicinity of T, as there is always a person agreement on this auxiliary for person in this context. In the perfective too the aspectual head must never move to the vicinity of T, as we saw that in this context, there is never a person agreement on the perfective aspect.

The implications for this general analysis of the adult Hindi grammar predict that in non-perfective aspects all Hindi subjects should trigger subject agreement conforming to SCOPA. Secondly, it is expected that in the perfective aspect all Hindi direct objects should trigger SCOPA respecting object agreement. However, we see in the following examples that these expectations are not fully applicable in all contexts.

- (19) tum ko / ram ko bhuukh lag rahii hE
 you DAT./ ram DAT. hunger feel PROG.be-PRES.
 2P. M.SG. F.SG. F.SG. 3P.SG.
 ‘You are/ Ram is feeling hunger’
- (20) mujh se / ram se hii ye khiRkii khultii hE
 I-OBL. INST. Ram INST. EMPH. this window open-IMPERF be-PRS.
 1P.SG. M.SG. F.SG. F.SG. 3P.SG.
 ‘Only I am/ Ram is able to open this window’

In the experiencer dative structure in Hindi in (19), the subject does not trigger agreement, as is also the case in the abilitative construction in (20). It is the nominal in the N+V complex that controls the agreement in the former and in the latter, it is the object.

the accusative *-ko* marking is obligatory for these objects owing to their high prominence on the Animacy and Definiteness scale (Aissen 2003).

- (i) Ravi ne mujh ko dilli bhejaa hE
 Ravi ERG. I-OBL. ACC. delhi send-PERF. be-PRES.
 M.SG. DO (F.SG.) IO-F.SG. M.SG. 3P.SG.
 ‘Ravi has sent me to Delhi’
- (ii) Ravi ne mujh ko billii dii hE
 Ravi ERG. I-OBL. ACC. cat give-PERF. be-PRES.
 M.SG. IO-(F.SG) DO-F.SG. F.SG. 3P.SG.
 ‘Ravi has given me a cat’

⁹ A full discussion of the range of independent evidence that indicates that Hindi subjects do raise to [Spec,TP] would take us too far afield. See Kidwai (2000) and the references to earlier work cited therein for evidence from the subject orientation of reflexives and the anti-subject orientation of pronouns as evidence for a raising to [Spec,TP] analysis of Hindi external arguments.

- (21) Ram ne almaarii dekhi**ii** thi**ii**
 Ram ERG. cupboard see-PERF. be-PAST.
 M.SG. F.SG. F.SG. 3P.F.SG.
 ‘Ram had seen the cupboard’
- (22) Ram ne almaarii ko dekha**a** tha**a**
 Ram ERG. cupboard ACC. see-PERF. be-PAST.
 M.SG. F.SG. M.SG. 3P.M.SG.
 ‘Ram had seen the cupboard’

In the simple transitive structure in the perfective aspect in (21), the object controls agreement as predicted by the analysis so far, but if the same object is *-ko* marked for differential object marking, this agreement is not allowed. Instead, there is a default no agreement, that is, a masculine singular agreement appears as a default form.

The evidence provided in the discussion of structures like those in (19) to (22) have led Hindi grammarians to conclude that the object agreement at play in the ergative is only a sub-case of a larger condition on verb agreement in Hindi, by which morphological Case-marking renders noun phrases invisible to agreement processes, which must then look to the next available unmarked argument. We frame the larger condition in more contemporary terms as stated in (23).

- (23) *The Hindi Case Blocks Agreement Condition*
Overt Case marking renders the phi-features of nominal phrases invisible for agreement (i.e. to T and v probes)

The CBAC forces object agreement where the subject is overtly case-marked, or a default agreement in case the object too is overtly case marked. Kashmiri, Marathi and Punjabi are other ergative Indo-Aryan languages known to show this property of overt case-marking rendering the nominal phrase invisible for agreement¹⁰. This entails that the Hindi verb agreement is with the highest bare (not morphologically case-marked) argument.

Drawing all the strands of the discussion thus far together, the adult grammar of Hindi as far as verb agreement is concerned is one in which SCOPA and the CBAC work in tandem. While SCOPA regulates which features can be expressed by the agreement relation based on the structural configuration of the agreeing heads, the CBAC determines which noun phrases can count as agreement controllers in the first place. In effect, SCOPA forces non-subject verb agreement to be insensitive to person.

4. The Acquisition of Verb Agreement

With SCOPA and CBAC restricting and governing verb agreement in the adult Hindi grammar, we try to look for evidence if the same are to be found functional in the

¹⁰Nepali and Gujarati, on the other hand, show agreement with ergative marked subjects and with overtly marked accusative objects respectively. Bhatt (2005) suggests that this difference in the treatment of case-markers and their ability to block agreement may be a matter of parametric variation in the languages.

children's developing grammar, that is, if either or both are hard-wired, or if one is and the other is not. If CBAC were active in the developing grammar, but SCOPA is not, then we expect children to do person agreement on the PROG and the TENSE auxiliaries in non-perfective contexts. If, however, SCOPA is active, but CBAC is not, then we expect children to show gender and number agreement on the PROG auxiliary and person agreement on the TENSE auxiliary with an overtly case marked argument. With these questions in mind, we look at the data for verb agreement in the corpus and talk about the observations in detail in this section.

Unlike the high accuracy in our findings with respect to Case which we discussed in Section 2, we found that children made more errors in verb agreement both in the progressive and perfective aspects. The numbers per child for total utterances in the progressive and the perfective along with the rate of accuracy in verb agreement are presented in the table below. Boldfaced percentages represent more than one instance of an error¹¹.

(24) *Summary of Agreement Errors in the Progressive and Perfective Aspect*

S.NO.	CHILD	AGE	TOTAL UTTERANCES			ACCURACY IN VERB AGR. % ¹²	
			TOTAL	PROG.	PERF.	PROG.	PERF.
1.	CP	3;5	56	29	27	86.20	96.29
2.	ST2	3;7	59	30	29	96.66	75.86
3.	RG1	3;7	49	26	23	80.76	100
4.	AG1	3;7	53	26	27	88.46	100
5.	SS1	3;9	63	32	31	100	87.09
6.	RG2	4;3	53	23	30	86.95	83.33
7.	SR	4;4	59	30	29	80	75.86
8.	TA	4;7	60	33	27	100	100
9.	HA	4;7	59	31	28	100	92.85
10.	RM	4;7	61	32	29	96.87	82.75
11.	AS	4;7	65	33	32	100	93.75
12.	TB	4;9	64	31	33	100	96.96
13.	KR	5;0	57	28	29	100	96.55
14.	NK	5;1	61	31	30	100	96.66
15.	HSS	5;3	64	32	32	90.62	87.50

¹¹ The entire corpus comprised of over 8000 utterances. The 17 pairs of pictures, elicited twice for each of the 21 children, gave a target number of 1428 responses. For each of the target sentences, the response closest in similarity to the target structure was chosen as representative. Eliminating the irrelevant responses, null responses, gave us a total of 1238 responses for purposes of the statistical analysis of the corpus.

¹² All percentages have been approximated to two decimal places.

16.	HP	5;5	64	33	31	96.96	90.32
17.	SS3	5;6	59	33	26	100	96.15
18.	IS	5;6	49	33	16	75.75	62.50
19.	AG2	5;8	54	31	23	96.77	100
20.	SM	5;9	65	33	32	100	100
21.	AKS	5;11	64	33	31	96.96	80.64
TOTAL			1238	643	595	93.95	90.24

In the sub-sections that follow, we discuss these errors in the progressive and perfective aspects in some detail, analysing the possible causes for these errors based on the pattern of their occurrence, if any.

4.1 Acquisition of Verb Agreement in the Perfective Aspect

In the perfective aspect with an ergative marked subject, agreement on the perfective participle and the TENSE auxiliary should be with the non-case marked direct object, or there is a default agreement of third person, masculine, singular if the object is *-ko* marked for DOM, or in the case of complex predicates agreement is with the nominal part of the N+V. We see instances of these in the children's utterances, as seen in (25), (26) and (27).

(25) watchman ko ghaRii dikhaai mere papa ne (CP: 3;5)
 watchman DAT.. watch show-PERF. my father ERG.
 M.SG. F.SG. F.SG. M.SG.
 'My father showed the watch to the watchman'

(26) aunty ne laRkii ko nehlaayaa (TA:4;7)
 aunty ERG. girl ACC. bathe-PERF.
 F.SG. F.SG. M.SG.
 'The aunty bathed the girl'

(27) doctor ne nurse ko gudgudii kii (SM:5;9)
 doctor ERG. nurse ACC. tickle do-PERF.
 M.SG. F.SG. F.SG. F.SG.
 'The doctor tickled the nurse'

The table below quantifies the findings of the study for children's use of verb agreement in the perfective aspect.

(28) *Children's Verb Agreement in the Perfective Aspect*

No. Of perfective responses	595
No. Of perfective responses with overt subject	580
No. Of correct agreement in perfective	539
No. Of incorrect agreement in perfective	56

Incorrect agreement (not with DO/N of N+V)	56
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Ditransitives	36	M agreement instead of F agreement	32
		F agreement instead of M agreement	4

Complex predicates	19	M agreement instead of F agreement	12
		F agreement instead of M agreement	7

Transitive	1	F agreement instead of M agreement	1
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Agreement with Ergative Subjects: 0

Of the 595 perfective responses, there were 56 responses with incorrect agreement on the perfective participle, which is less than 10 percent. These errors were in 36 responses for ditransitive predicates ('give', 'send', 'write', 'show'), 19 of complex predicates ('tickle', 'kiss', 'hug', 'push', 'help') and 1 simple predicate ('bathe'). In either predicate type, the only discernible pattern in these errors that may give an insight into the children's application of the rules of Hindi agreement is that in 44 of the 56 errors, which make up close to 80% of these, masculine agreement appears when the gender value of the controller of agreement is feminine. Because this masculine agreement occurs irrespective of the grammatical gender of either of the arguments of the sentence, we analyse this to be an overgeneralization of the default system of no agreement in these responses.

In the ditransitive constructions, gender and number agreement on the perfective participle was required to be with the theme DO with non-overt case marking, but there is ambiguity in these instances between the children using a default masculine agreement, as it seems to be in (29) (all the referents to the nominals are singular in number), or assigning a masculine gender to the borrowed English counterpart for the nominal instead of the feminine gender value of the Hindi counterpart, as it seems to be in (30), or the children not assigning the correct gender value to particular nominal, as in (31).

- (29) uncle ne aunty ko ciTThii bhejaa (ST2:3;7)
 uncle ERG. aunty ACC. letter send-PERF.
 M.SG. F.SG. F.SG. M.SG.
 'The uncle sent a letter to aunty'

- (30) aadmii ne laRkii ko letter bhejaa (SS1:3;9)
man ERG. girl ACC. letter send-PERF.
M.SG. F.SG. F.SG. M.SG.
'The man wrote a letter to the girl'
- (31) cook ne raajkumaar ko cammac dii (HA:4;7)
cook ERG. prince ACC. spoon give-PERF.
M.SG M.SG. M.SG. F.SG.
'The cook gave the spoon to the prince'

In the complex predicate structures, the errors in verb agreement on the perfective participle made by children appear to be caused by the use of a previously unfamiliar predicate, or the result of an incorrect gender value assigned to the nominal part of the N+V complex predicate in the children's vocabulary.

- (32) nurse ko doctor ne gudgudi karaa
nurse ACC. doctor ERG. tickle do-PERF.
F.SG. M.SG. F.SG. M.SG.
'The doctor tickled the nurse'

An important point to note here though is that there is absolutely no systematic evidence to suggest an agreement controlled by ergative marked subjects in these erroneous instances of perfective constructions.¹³ Besides, in spite of all nominals in the study being third person referents, we saw absolutely no violation of person agreement on the perfective participle. These facts very strongly indicate the presence of both SCOPA and CBAC in the children's grammar.

4.2 Acquisition of Verb Agreement in the Progressive Aspect

Agreement in the imperfective aspect in adult Hindi is with the nominative (null case-marked) subject for gender and number on the PROG auxiliary, and for number and person on the TENSE auxiliary. While 9 children have a hundred percent accuracy in their use of verbal agreement (for gender and number¹⁴) in the progressive aspect, 5 children had only one error, which we may attribute to a performance error, as a non-recurring phenomenon. Even though the average percentage of verb/auxiliary agreement errors in the represented sample set is less than 7% of the total number of responses in the progressive aspect, these are mostly concentrated in those of 7 children.

¹³ The only non-nominative subjects in the study were ergative subjects, but we predict that these findings hold for other non-nominative subjects as well, such as the instrumental marked abilitative constructions and the dative marked experience subject constructions.

¹⁴ Since all the referents to the target nominal phrases in the pictures were singular in number, but varied in gender, we are assuming that gender and number agreement occurs simultaneously.

(33) *Children's Verb Agreement in the Progressive Aspect*

No. of progressive responses	643
No. of correct agreement in progressive responses	606
No. of incorrect agreement in progressive	37

Category of error	No. of errors	% of errors
Agreement with F object/IO instead of M SU on PROG-AUX.	12	32.43
Agreement with M object/IO instead of F SU on PROG-AUX.	22	59.45
Ambiguous ¹⁵	3	8.11
Total	37	100

Agreement with F object/IO on PROG AUX and M SU on TENSE AUX.¹⁶	3
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The 12 errors in which feminine agreement appears instead of masculine are those in which agreement on the *rah-* progressive auxiliary is clearly controlled by a morphologically case marked object instead of the non-case-marked subject, as seen in (34), (35) and (36).

(34) laRkii laRke ko uThaa rahaa hE (AG1:3;7)
 girl boy ACC. lift PROG.be-PRS.
 F.SG. M.SG. M.SG. 3P.SG.
 'The girl is lifting up the boy'

(35) raajaa is laRkii ko khiiNc rahii hE (SR:4;4)
 king this girl ACC. pull PROG.be-PRES.
 M.SG. F.SG. F.SG. 3P.SG.
 'The king is pulling this girl'

(36) queen cook ko tickly kar rahaa hE (IS:5;6)
 queen cook ACC. tickle do PROG.Be-PRS.
 F.SG. M.SG. F.SG. M.SG. 3P.SG.
 'The queen is tickling the cook'

There are 22 instances of ungrammatical masculine agreement instead of feminine agreement, as in (34) and (36) above and (37)¹⁷, (38) below. It could be argued that some of these are a result of a default, no agreement system allowing a masculine singular agreement, but we see that each of these utterances has a masculine gender object with overt case-marking.

¹⁵ The ambiguities in these 3 errors arise, as it appears the grammatical gender value assigned to the nominal is uncertain in the grammar of these children.

¹⁶ These 3 utterances were not part of the representative sample set, but are part of the children's attempts to utter the target response. The reasons to especially include them in discussion here will become clear as the analysis proceeds in this section.

¹⁷ The utterances in (36) and (37) are by two different children, hence not the same.

- (37) queen cook ko tickly kar rahaa hE (RG2:4;3)
 queen cook ACC. tickle do PROG.be-PRS.
 F.SG. M.SG. F.SG. M.SG. 3P.SG.
 ‘The queen is tickling the cook’
- (38) ek fairy magician ko kiss kar rahaa hE (IS:5;6)
 one fairy magician ACC. kiss do PROG.be-PRS.
 F.SG. M.SG. F.SG. M.SG. 3P.SG.
 ‘A fairy is kissing the magician’

Data such as that in (34) to (38), suggests a violation of CBAC in these utterances, allowing a morphologically case marked nominal to control the agreement on PROG auxiliary. It is not clear, however, if the TENSE auxiliary is in its default form, or it is agreeing with the subject or the object. The following three utterances, two of which are by the same child¹⁸, not only support our observation of agreement with a case marked object, but also provide additional clues to the malfunctioning system in place in the developing grammar.¹⁹

- (39) aur raajaa laRkii ko gift de rahii thaa (SR:4;4)
 and king girl ACC. gift give PROG.be-PAST
 M.SG. F.SG. M.SG. F.SG. M.SG.
 ‘and the king was giving a gift to the girl’
- (40) ek laRkaa... us kaa madad kar rahii thaa (RM:4;7)
 one boy that GEN. help do PROG.be-PAST
 M.SG. SG. M.SG. F.SG. F.SG. M.SG.
 ‘A boy was helping her’
- (41) ek laRkaa... laRkii kii madad kar rahii thaa (RM:4;7)
 one boy girl GEN. help do PROG.be-PAST
 M.SG. F.SG. F.SG. F.SG. F.SG. M.SG.
 ‘A boy was helping a girl’

These instances of a simultaneous agreement, as seen in (39), (40) and (41), show more than one layer of agreement, wherein the aspectual head agrees in gender with the case-marked feminine object, and the past TENSE auxiliary agrees with the null case-marked masculine subject.

Even though this phenomenon of simultaneous agreement with more than one argument is rare in the corpus, it is strongly indicative that agreement on the TENSE auxiliary is restricted by SCOPA to be with the subject only. The CBAC, however,

¹⁸Refer to footnote 16.

¹⁹ As noted by the anonymous reviewer, all of the examples of CBAC violation show progressive auxiliary agreement with the linearly closer but case marked object, which may reflect memory constraints in the children’s grammar or effects of decay of the subject representation. This is an issue that we are aware of and are planning to address in future work. As yet, however, we are not in a position to address this, as our corpus does not contain the relevant information.

appears to be fallible in these children's grammar by the apparent tension in its use in the progressive and perfective aspects. We suggest that this is a grammar in transition for two reasons: first, the rate of the occurrence of these errors is very low; and second, younger children seem to make more of these errors than the older ones. Three out of five 3 year old children (60%), two out of seven 4 year old children (29%), and two out of nine 5 year old children (23%) had recurring instances of these errors.²⁰ It appears that the Hindi language specific CBAC takes a while to stabilize in the children's grammar, more so in the progressive aspect than in the perfective aspect. In the next section, we analyse in some detail this developing grammar and the derivational system employed by them, to account for this observable pattern in errors.

5. An analysis of Agreement in a Child's Developing Grammar

In order to analyse the derivational system in the developing grammar of children, we turn to Chomsky's (2000, 2001) operation of Agree to first discuss the adult system that governs phi-feature agreement on the verbal constituents in Hindi. We take recourse to Heck and Richards (2007) version of Agree as given below:

(42) *Agree*:

- α can agree with β with respect to a feature bundle Γ iff a.-d. hold:
 - a. α bears at least one unvalued probe feature in Γ and thereby seeks the β -value of a matching goal feature β in Γ .
 - b. α c-commands β .
 - c. β is the closest goal to α .
 - d. β bears an unvalued case feature.

Where features are central to the minimalist framework, the uninterpretable features enter into the derivation unvalued and must be valued and deleted from the derivation by spell-out. This valuation takes place in the operation AGREE, whereby a Probe, for instance T or a v , looks in its domain for a set of interpretable phi-features on a Goal, to match its own set of corresponding uninterpretable features. With the v probe object agreement in a transitive clause of Hindi then occurs presumably alongside accusative licensing. Subject agreement, on the other hand, as well as nominative licensing occurs when T is the probe. The ergative case, however, does not relate to either of these, as it is licensed by the perfective aspect. Although it is often assumed that $ASP_{PERF.}$ and $ASP_{IMPERF.}$ are merged in the same position, we suggest the two have different merge positions in the structure.²¹ We consider the implications of these structurally different configurations for the perfective and imperfective aspects, we propose that for some children CBAC is not firmly in place for $vASP_{IMPERF.}$, which is a biclausal phrase comprising of two monadic predicates. The biclausal structure creates an additional layer

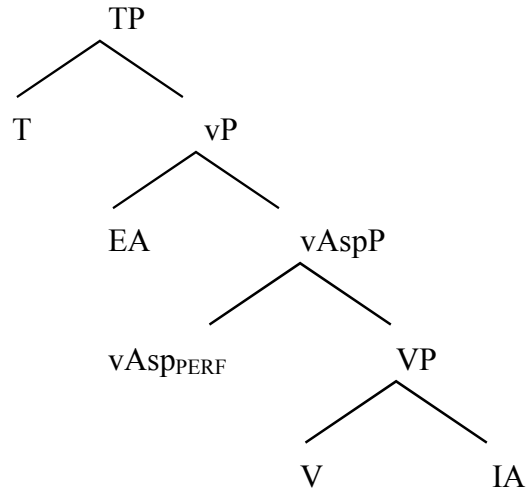
²⁰ Refer to the table in (24).

²¹ A theory of merge of the two aspects in different positions has been explored in recent research, such as that by Coon (2010), which proposes a difference in the clausal structure on the basis of an aspectual split. This analysis argues for a monoclausal structure for perfective aspect and a biclausal structure for the imperfective aspect. While this paper does not dwell into details of this analysis, we think it worthwhile to explore and consider its ramifications in future work.

of predication where the PROG auxiliary takes as complement a lower phrase headed by the main verb.

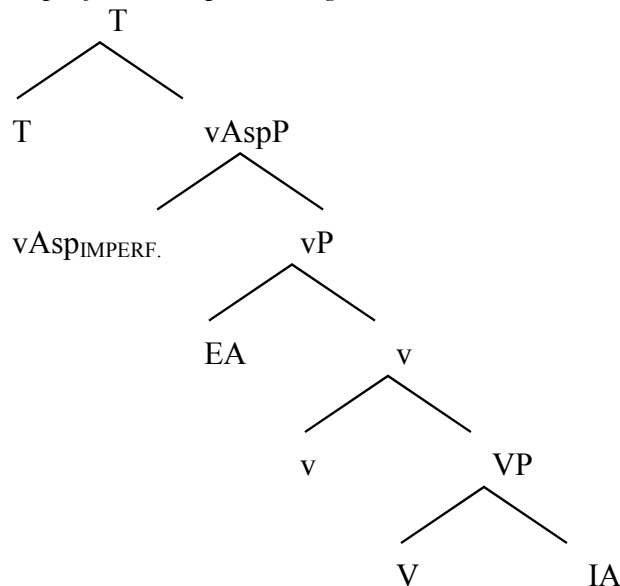
The perfective structure, for which we adopt Anand and Nevins' (2006) approach, is a simpler monoclausal structure that licenses the ergative, which considers the Hindi ergative to be assigned by a perfective v. As can be seen in the structure in (43), the location of the vAsp_{PERF}, the only goals available for it to seek for Agree are in the internal argument(s). The subject, therefore, cannot possibly provide the goal for the Asp probe in this configuration.

(43) *Perfective aspect is low in the structure*



The imperfective aspect merges higher in the structure as in (44) below. The external argument (EA) is merged in the [Spec,vP] and the internal argument (IA) in the complement of V, both merged lower than Asp. The Asp is able to then seek goals in both the external and the internal argument(s).

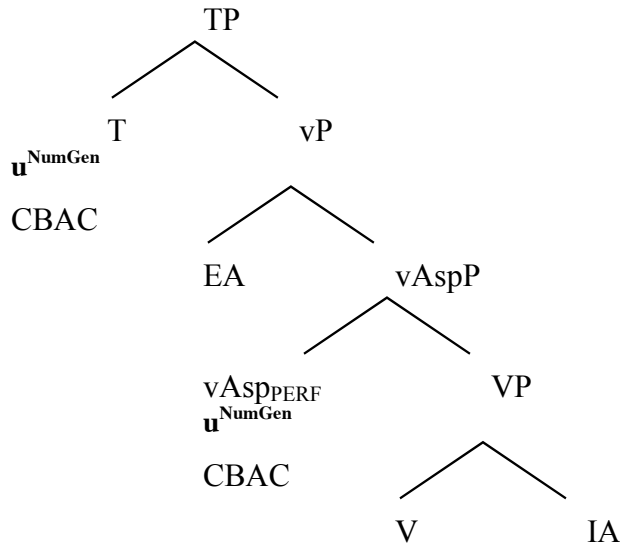
(44) *Imperfective aspect is higher in the structure*



A common characteristic of both the Asp heads in both the perfective and progressive aspects that comes to the forefront here is that they both lack an EPP feature preventing the movement of an argument to its specifier. By SCOPA this accounts for the absence of person agreement in the language on either Asp.

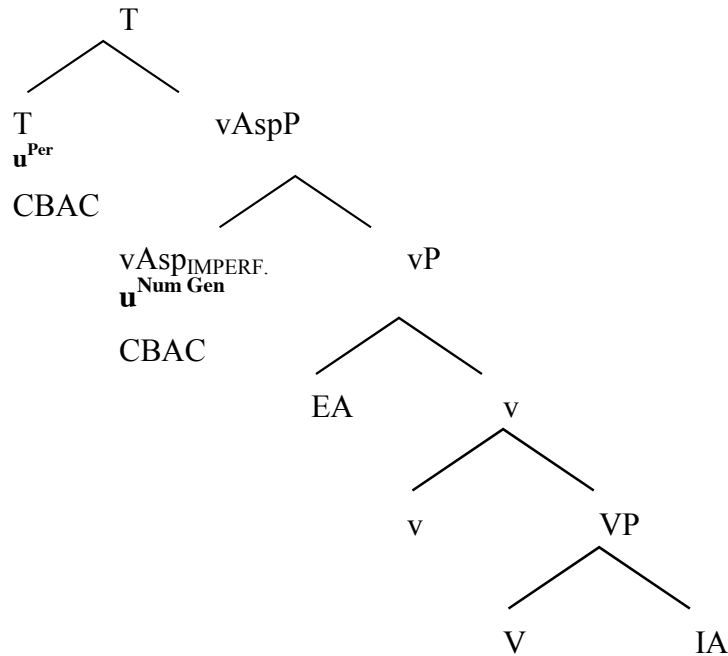
Turning to children's grammar of the perfective aspect to begin with, which we discussed in Section 4.1, we found evidence for the presence of CBAC, similar to its presence in the adult grammar as well. More specifically, for $vAsp_{PERF}$ children seem to have CBAC operational, as a result of which agreement takes place only with objects or in the default. The CBAC for T is also operational in the grammar which prevents an Agree relation with ergative subjects. This structure can be seen in (45) below.

(45) *Adult/children's grammar in the Perfective Aspect*



In nominative subject predicates in the progressive aspect, the Asp finds that the EA is the closest position to probe for Agree. The EA then raises to (Spec,TP] to meet its EPP requirement, where agreement for person takes place. The structure for this adult grammar version of such a clause in the progressive aspect would like that in (46).

(46) *Adult grammar in the imperfective aspect*



In some of the children's version of the ungrammatical derivation of the progressive aspect constructions, we predict that both the EA and the IA are visible to the progressive auxiliary, even though the IA is case marked in these utterances for DOM or the accusative. And since the children are seen to agree with this case marked IA, we suggest that for these children, CBAC is as yet fallible on the $vAsp_{IMPERF}$. This lack of CBAC on the aspectual head then lets the case marked nominal control the agreement on the *-rah* auxiliary. Agreement on the TENSE auxiliary does not at all come under the purview of this violation as T agrees with the subject only after subject raising. We know this from appearance of a double layer of agreement wherein the aspectual head agrees in gender and number with the case-marked object and the tense marking 'be' auxiliary agrees with the null case-marked subject, as was the case in (39), (40) and (41). This suggests the presence of an additional subdomain for agreement in the children's developing grammar at the vP level that generates such a dual agreement.

6. Conclusion

The observations made in our psycholinguistic study have led us to conclude that the children's grammar lacks in a consistent application of CBAC in the progressive aspect, while it is not so in the perfective aspect. By our analysis SCOPA is available to children's grammar as a hard-wired primitive, whereas the CBAC does not stabilize in the developing grammar until after the age of 5. Surprisingly, his instability seems to have no bearing on the children's learning of case. The relative accuracy in the children's use of different morphological cases in the language indicates that the adult system for case may have been acquired by the children relatively earlier than the agreement system.

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