

Aspectual interpretation of early verb forms in German

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Abstract

In the present paper, I will argue that even in a language like German, where the verb system does not contain a grammaticized aspect distinction, aspectual features do underlie the early form-function-mapping of verb forms in L1-acquisition. Furthermore, it will be argued that it is not only past tense forms that may receive an aspectual interpretation in early child language but also other forms of the verbal input. In the case of German, these are the forms of the present tense paradigm and the past participle. Showing and discussing various pieces of evidence for this assumption should strengthen the “aspect before tense” or “primacy of aspect” hypothesis. In general, the paper aims at a deeper understanding of the hierarchical relation between tense and aspect whereby aspect is the basic category and, therefore, aspectual features are the inevitable starting point of the acquisition of grammar.

1 Theoretical starting points

Proponents of usage-based concepts previously emphasized a strong dependence of both early child language as well as the course of acquisition on the target language (cf. Tomasello & Bates 2001). Despite the fact that many new insights into the course of language acquisition have reawakened our interest in questions such as that of the prerequisites for language acquisition as well as that of cognitive and developmental sources of the acquisition process, it would be pouring out the baby with the bath water if we were to reject a universal base of grammaticalization which is reflected in the course of acquisition from early on. It is assumed here that the observed distinctions in the early phases of language acquisition are of a more formal, rather than of a conceptual-grammatical, nature. Moreover, it will be argued that the basic features underlying the form-function mapping for grammatical elements are strongly and inevitably universal.

1.1 Slobin’s concept of early grammaticizable notions

That language-specific differences in the early phases of language acquisition are of a more formal rather than of a conceptual-grammatical nature has already been proposed in the 1970s and 1980s. Most explicitly by Slobin (1985), cf.:

The central claim ... is that LMC (i.e. Language Making Capacity, D.B.) constructs similar early grammars from all input languages. The surface forms generated by these grammars will, of course, vary, since the material provided by the input languages vary. What is constant are the basic notions that first receive grammatical expression, ...” (ibid.: 1161)

Slobin proposed that early form-function mapping to grammatical elements is based on “a residue of perceptually salient segments” (ibid.: 1189) which the child (or the LMC) extracts from the semantic space. Underpinning this process, Slobin assumed certain types of prototypical scenes including elements which are preferably grammaticized, i.e. grammaticizable notions. He discussed the manipulative activity scene and the figure-ground

scene including early grammaticizable notions such as change of state, result, process, and aspect. It will be argued here that the degree of abstraction from concrete semantic features is higher than Slobin explicitly assumed. However, it is worth noting that this higher degree of abstraction is implicitly entailed in his discussion of linguistically relevant properties. All the properties extracted from the various types of semantic space entail, or take part in, the opposition of a feature such as result, end-state, completion, punctual, figured, or contoured and a feature such as activity, ongoing, incomplete, non-punctual, or uncounted. Through consideration of the terms Slobin actually employed – and one can add telic vs. atelic, non-homogenous vs. homogenous and so on – the common character of these properties comes to light. All of them describe the difference between complete and incomplete pictures of a whole scene or certain parts of a scene. In terms of theoretical semantics, the basic opposition is that between the features unbounded and bounded or cumulative and quantized. The differences expressed by the various terms lie in the specificity of the domain they are assigned to, i.e. verb grammar, noun grammar, utterance structure and so on, but not in the basic character of the opposition.

The principles and mechanisms of perception allow, and the constraints on language as a means of communication demand, the extraction of very general and abstract features from the semantic space. Direct grammaticization of explicit semantic concepts such as animacy or location in space or colour and so on would lead to a quantity of grammatical distinctions that could hardly be coped with, and it would undermine or at least overburden the systematicity and effectiveness of language. The meaning of grammatical concepts is organized in parallel to the meaning of lexical concepts. To put it simply, they encode just basic conceptual notions. The concrete meaning in a certain act of communication arises from the interrelation with the domain to which they are applied and from further contextual elements.

The early (or basic) grammaticizations appearing in the patterned use of input forms can be viewed as based on general and abstract features which have their source in the common nature of human perception. These features originate from the inevitable determination of the human's cognition of the dimensions of space and time. Considering the feature 'time', we observe a basic opposition, *now* and *not now*, which immediately leads to three points on the time axis: *now* – *before now* – *after now*. Regarding the dimension of 'space', we can observe a parallel differentiation: The basic opposition is *here* vs. *not here* with *not here* covering the oppositions of *left* vs. *right*, *top* vs. *bottom*, *in front* vs. *behind*, i.e. there are also three spatial dimensions. Adding the third, the source of perception level, which is person according to Bühler's origo (Bühler 1965), once again a parallel oppositional structure arises: *me* vs. *not me* where *not me* covers the opposition between *addressee* and *element dealt with (or spoken about)*.

Whether one assumes that these general perceptual distinctions result from innate or from cognitively acquired knowledge does not affect their status as language independent and universal prerequisites for the acquisition of grammar. Irrespective of the theoretical axioms with respect to innateness, "general perceptual-cognitive capabilities" are assumed to underlie the acquisition of grammatical structures and the organisation of grammar in general (cf. the discussion of Bickerton's assumptions on the perceptual capabilities underlying Creole TAM-systems by Givon (1982: 155)).

1.2 Jakobson's concept of the system of verbal categories

The non-target use of past forms in early language acquisition observed in different types of languages yielded an intensive debate on whether or not there is a universal conceptual base for the first form-function-mappings. In the beginning, many if not most authors proposed an aspectual interpretation of past forms by children, cf. among others Brown (1973), Bronckart

and Sinclair (1973), Antinucci and Miller (1976). Later on, the notion of aspectuality was replaced (and seemingly specified) by terms such as resultativity, telicity, punctuality and others. This led to the impression that different grammatical domains or oppositions are included in early form-function-mapping with verbs and that language-specificity is more important for the acquisition process than had previously been noticed. As true as this might be, it has also weakened the universal perspective on grammatical(izable) features.

As mentioned above, the hypothesis for which it shall be argued here is in line with the aspect before tense hypothesis. Support for this stance is based not only on empirical findings which will be discussed in the next section, but also on the application of a theoretical concept of language and grammar which (as far as I can see) has been overlooked in the discussion on, and explanation of, the order of tense and aspect acquisition.

In fact, aspect and tense realisations are fused in many languages and interact in various ways. However, Jakobson (1957) showed that the two categories display a clear hierarchical relation with aspect as the underlying or basic category and tense as the more complex, more specific category developed on the top of the features of the aspect category. Following the ideas of Peirce (cf. Peirce 2000) on the constitutive elements of a speech event, Jakobson identified two constitutive parts for each speech act: the event (E) and the participants (P) of the event. This dichotomy has to be realised twice because each speech event involves two dimensions: the narrated event (Eⁿ) with the narrated participants (Pⁿ), and the speech event (act of speaking, E^s) with its participants (speaker and hearer, P^s). Grammatical categories have the function of informing about the properties of these elements and their relations, i.e. how they are to be perceived. Thus, the established symbols can be used to describe these functions in general, cf.¹:

Table 1. The function of the verbal categories according to Jakobson (1957)

category	symbol	information about:
number	P ⁿ	the narrated participants
person	P ⁿ /P ^s	the narrated participants from the perspective of the speech participants
aspect	E ⁿ	the narrated event
tense	E ⁿ E ^s	the relation of the narrated event to the event of speaking
voice	P ⁿ E ⁿ	the relation of the narrated participants to the narrated event
mood	P ⁿ E ⁿ /P ^s	the relation of the narrated participants to the narrated event from the perspective of the speech participants

The two categories discussed in this paper, aspect and tense, only provide information about the event (E). The function of aspect is to inform about the quantity of the narrated event (Eⁿ), nothing else. The function of tense is to inform about the (temporal) relation between the narrated event and the speech event (EⁿE^s). As can easily be seen, there is a clear increase in the complexity of information provided by the tense category compared to the aspect category. Furthermore, the tense category contains the constituting features of the aspect category (Eⁿ). Categories which relate narrated elements to (elements of) the speech event are called shifters by Jakobson, i.e. they are deictic categories.

Leiss (1992) emphasised that, strongly taken, there is no non-deictic grammatical category in language. The speaker position is always the very starting point of reference and each grammatical category assigns a certain relation to this inevitable point in reference space. However, with respect to tense and aspect, this does not affect the complexity and the nature

¹ Only the central verbal categories are listed here. For a complete description see Jakobson (1957: 136) and e.g. Nurminen (2002: 121, 132).

of the hierarchy between the two categories. When aspect is viewed as weakly deictic because of the involved relation between E^1 and the inevitably given point E^2 , tense is constituted by adding a third point in time/space, the point from which E^1 is to observe, i.e. the reference time according to Klein (1994) or the time of observation as Leiss called it.

Consequently, a first argument in favour of the aspect before tense hypothesis is the common assumption that less complex categories are acquired prior to more complex categories. However, the hierarchical relations between the verb categories described by Jakobson provide further systematic arguments. Since the properties of the tense category involve the properties of the aspect category, aspect necessarily emerges before tense. Aspect is of a more basic nature in the hierarchy of verb categories than is tense.²

1.3 Hypotheses on early form-function mapping in first language acquisition

The category of aspect provides a grammaticized opposition which relates the above mentioned features of boundedness/unboundedness (cf. section 1.1) to the quality of the described state of affairs. Properties concerning the proposition as a whole are expected to be assigned at its central element, the verb. However, there are languages which lack an overt aspect category at the verb. These languages employ other linguistic means to express aspectual properties of the proposition (cf. Leiss 2000). Nevertheless, because of the basic nature of aspectual distinctions and the affinity for expressing them at the verb (cf. Bybee's criterion of relevance, Bybee 1991), the following hypothesis on the onset of grammaticalization in first language acquisition can be formulated:

General Hypothesis on the onset of grammaticalization:

There is a universal starting point in the grammaticalization of the input. The first steps in form-function mapping in whatever domain of grammar concern the opposition of the perceptual features boundedness vs. unboundedness.

Consequently, it will be argued here that aspectual properties occur as the first categorization of event properties.

Hypothesis on grammaticalization of the verb domain:

When a language expresses grammatical distinctions at the verb, form-function mapping of verb forms will start with an aspectual interpretation.

The latter hypothesis includes the assumption that forms other than past tense or perfect can also undergo an aspectual interpretation by the child and, furthermore, that even in languages without a grammaticized category of aspect, early form-function-mappings concern aspectual interpretations of input forms.

In the following, the latter hypothesis in particular will be explored on the basis of an analysis of the acquisition of the present tense forms in German (section 4). The focus is placed on the discussion of pieces of evidence for the nature of the first form-function mappings for three forms (section 5), i.e. the *-en* form which is typically called the 'infinitive' form, the *-t* form which is the target form of the 3rds, and the stem or *-Æ* form which is the target form of the 1sts. In advance, a brief summary of recent knowledge and discussions of the acquisition of German verb inflection will be provided (section 2).

² The emergence of tense can be traced back to the division of E^3 into E^2 and E^1 (reference time).

2 Previous research on L1-acquisition of German verb inflection

From previous studies (cf. Clahsen 1988; Bittner 2003; Ingram, Welti & Priem forthcoming), it is well-known that German children gain command of verb morphology in the following order: *-en* forms > *-t* forms (>) *-Æ* forms; past participles > *-st* forms ... (cf. the verb *machen* ‘to do’: *mach-en* – *mach-t* – *mach* – *ge-mach-t* – *mach-st*). With the exception of the past participle, all of these forms belong to the present tense paradigm and are assumed to assign person-number categories in adult German, cf.

Table 2. Person/number-inflection of lexical verbs (example: *machen* ‘to do’)

	singular	plural
1. person	<i>mach-Æ/(e)</i>	<i>mach-en</i>
2. person	<i>mach-st</i>	<i>mach-t</i>
3. person	<i>mach-t</i>	<i>mach-en</i>

Whereas children seem to use the *-st* form and, more or less, also the stem form (*-∅*) in an adult-like function from early on, the use of *-en* and *-t* forms is not adult-like in the beginning. The respective overgeneralizations gave rise to some debate concerning the underlying form-function-mapping. Considering *-en* forms, two oppositional hypotheses have been proposed: the optional infinitive hypothesis (Wexler 1999) and the modal hypothesis (Ingram and Thompson 1996). As is well known, the optional infinitive hypothesis explains the extended use of *-en* forms by a “defect” in the parameter setting for functional categories of the verb. Either tense (Wexler 1999) or agreement (Meisel 1994) features are assumed to be not yet set as obligatory in the child’s grammar. Beside the description of the child’s grammar as defective, one problem of these analyses lies in the classification of *-en* forms as adult-like infinitives from the very beginning. Because of the absence of productive finite structures (cf. among others Ingram and Thompson 1996, Jordens 2002), no adult-like opposition of finite vs. non-finite exists in early child language. Consequently, the functional specification of the *-en* form should be different at the beginning rather than later on. The changes in use, distribution, and in the functional interpretation of the *-en* form are not taken into consideration and, thus, remain unexplained by the optional infinitive hypothesis. It will be shown here that, even in the period which is considered the optional infinitive stage, developments can be observed that suggest changes in the functional specification of *-en* forms.

The modal hypothesis suggests that *-en* forms are mainly used in utterances which can receive a modal interpretation. In target language, the predicate of these utterances consists of a finite modal verb and the infinitive form of a main verb (*er will spielen* ‘he wants to play’). The non-target use of the *-en* form in child language results from the omission of the modal part of the construction. It is debatable whether this claim is verifiable. How sure can one be about the intention of the child in uttering something like *wasser gehen* ‘go into the water’ while looking at another child that is in a lake or a bath. Does the child comment on the situation or does s/he express a wish or intention (cf. Ingham 1998: 60)? The child has still not learned to linguistically distinguish these two possibilities, both are covered by the *-en* form. Furthermore, a certain amount of utterances not classifiable as modal remain unexplained in the given analyses. The question arises of whether the *-en* form has a more general function in the child’s grammar than is assumed by the modal hypothesis.

Clahsen (1988) presented an extensive analysis of the acquisition of the present tense paradigm and discussed the steps and developmental phases of this acquisition process in the frame of Pinker’s (1984) model of lexical learning and the assumed learning mechanisms.

Nothing substantially new can be added to Clahsen's description of the order of acquisition by the present study. Also, there are parallels in the explanation of the observed development. This will be mentioned in particular in the respective sections of the paper. However, there is a strong difference with respect to the linguistic model of Clahsen and the present attempt. Following Pinker, Clahsen assumes that the content of form-function mapping and paradigm construction is adequately described by the cover terms of grammatical categories, i.e. person, number, transitivity and so on. To the contrary, the present paper follows the assumptions of Jakobson and other functional concepts of language, such as, for instance, the concept of natural grammar (Coseriu 1987; Leiss 1992, 2000, Dressler 1997). According to these concepts, grammatical forms are not only of a structural nature but also contain a semantic meaning.³ They are signs which inform the hearer how to perceive the single referents and the whole situation provided by an utterance. It is claimed that a small amount of perceptual features exist which build the basic level of the category system of each language. The cover terms of linguistic categories describe with respect to which semantic-cognitive and structural domains these perceptual features are relevant. The category systems of the languages are the result of a certain technique of realization of these features. Language specificity results from the difference in the means of realisation and from a difference in the further subclassification of the categorical domains. Consequently, the proposed aim of the paper correlates with the attempt to find out what types of perceptual features are assigned by early verb forms in German, what domains they are relevant for, and how they constitute the verbal paradigm in child grammar.

3 Method of analysis

3.1 The data

The present analysis is based on the data of one German child, the girl Anna, in the age range of 1;8 – 2;3.

Table 3. Data of Anna used in the present analysis

age	analysed utterances ⁴	utterances with verbs:	
		numbers	%
1;8.10	293	52	17,7
1;8.29	218	76	34,8
1;9.14	237	65	27,4
1;10.0	266	86	32,3
1;11.6	313	165	52,7
1;11.20	284	147	51,8
1;11.30	248	132	53,2
2;0.5	292	150	51,4
2;0.29	525	288	54,9
2;1.13	345	209	60,6
2;1.27	498	340	68,3
2;2.17	315	183	58,1
2;3.8	514	366	71,2
2;3.29	441	297	67,6

³ The acquisition concept of Slobin (cf. section 1.1) partly correlates with these considerations.

⁴ Utterances not containing at least one meaningful lexical unit resembling a German word in form and meaning as well as bare yes/no utterances were excluded from the analysis.

Recordings took place at the girl's home. They mainly cover playing situations; occasionally, kitchen work, dinner and other home situations are included. Anna is growing up in Berlin and can be described as an early talker and a rather segmental child. Formulaics, frozen forms and imitations are less attested in her data.

3.2 Demarcation of phases in the acquisition of verb forms

Three phases can be distinguished with respect to the acquisition of verb inflection within the investigated period. In a first phase lasting up to the age of 1;10, Anna predominantly uses the *-en* form (*kaufen* 'to buy', *malen* 'to draw', *machen* 'to do'). More than 50% of the attested verb tokens end in *-en*. Nearly no contrasting inflectional forms of one and the same verb are produced in this first phase, verb lemmas occur in one morphological form only. In addition to the *-en* forms, a smaller amount of verbs ending in *-t* and a few verb stems are attested. In a second phase which lasts up to the end of age 2;0, the *-t* form becomes more frequent and an increasing number of verbs are produced as *-en* and *-t* forms, i.e. the first inflectional contrast develops. Finally, in a third phase covering the age period of 2;1 to at least 2;3, the bare stems which are the appropriate forms in 1sts contexts and in 2nds imperative become productive. Thus, a threefold inflectional contrast starts to develop.

The demarcation of phases and their main properties can be summarized as follows:

- (1) phase I 1;8-1;10 → *-en* forms
- phase II 1;11-2;0 → *-t* forms → *-en/-t* contrast
- phase III 2;1-2;3 → *-∅* forms → *-en/-t/-∅* contrast

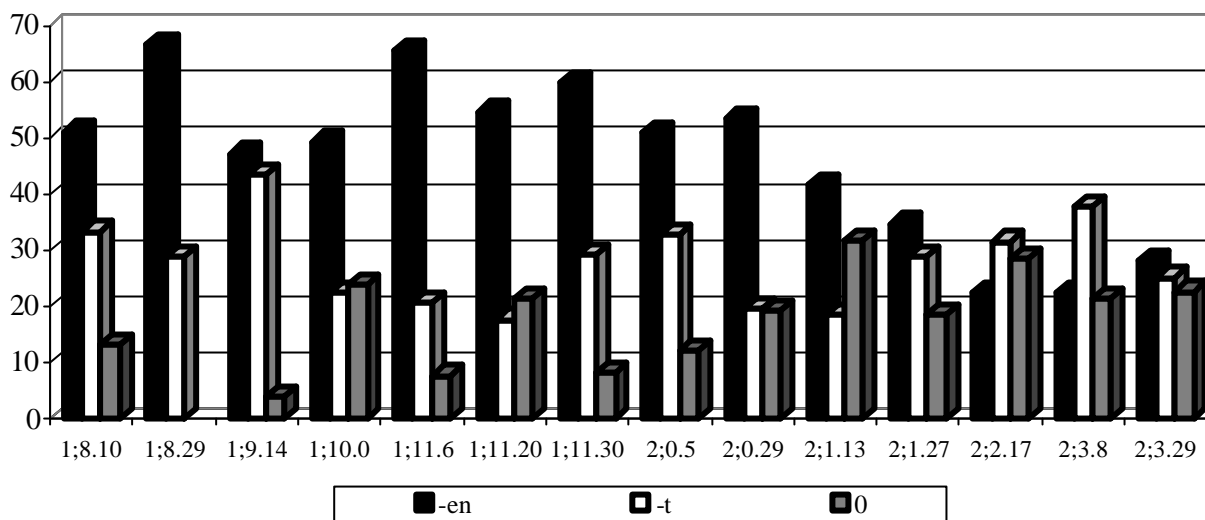
4 Analysis of early verb use

In this section, I will present certain observations on Anna's use of the above mentioned three verbal forms: the *-en* form, the *-t* form, and the stem form (\emptyset). Although the respective forms are present tense but not past tense forms, the child's use of each of these forms, especially the non-target uses, suggests that aspectual features underlie the first form-function-mappings. This will be discussed in more detail in section 5.

4.1 Early use of *-en* forms

Figure 1 presents a quantitative analysis of the token frequency of the three forms under discussion. Up to the age of 2;1, the *-en* form clearly dominates in token frequency. The peak in dominance of *-en* tokens appears at age 1;10–1;11.

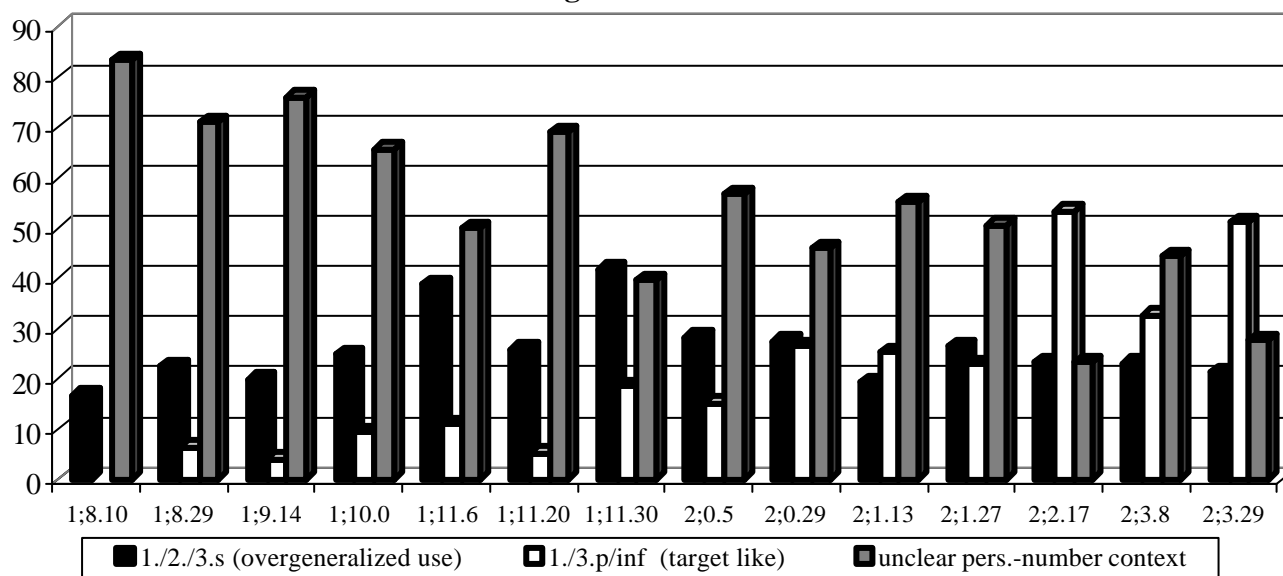
Figure 1: token frequency of *-en*, *-t*, and *stem (-Ø)* forms



The use of an *-en* form is target-like if the subject phrase requires the 1st or 3rd person plural form of the verb or if the verb is used as the infinitival part of an analytic construction. However, target use is hardly observable in the early periods. Analytic constructions only start to become productively used at the age of 2;1. Additionally, the subject phrase is realised in less than 20% of the verb utterances in the beginning. Only around the age of 2;0, does an increase in overt subject phrases occur. The mark of 50% of overtly realised subjects is reached only around the age of 2;1. However, considering the verb utterances where the context provides clear evidence about the intended subject plus the utterances containing an overt subject phrase, target use of *-en* forms, i.e. use in correlation with a plural subject or in infinitive position, amounts to only a small part of the attested *-en* tokens.

Figure 2 presents an analysis of the use of *-en* forms according to target and non-target subject-verb agreement.

Figure 2 : use of *-en* forms



Not taking into account utterances with no detectable subject (grey bars), *-en* forms predominantly appear in utterances associated with a subject in singular (dark bars) up to the age of 2;0. Target use in plural contexts starts to increase around the age of 2;1 but reaches clear preponderance only after the age of 2;2.

The examples in (4) show that non-target use of *-en* forms is attested for all types of person-number contexts in the singular.

- (2) 1sts: *hausschuh ausziehen* ‘(I) take off my slippers’
runtergehen ‘(I) go off’
 2nds: *ausschlafen?* ‘(have you) slept off?’
au(ch) spitzen ‘(you) also sharpen (it)’
 3rds: *puppe essen* ‘the doll is eating’
haare waschen ‘(mama) is washing her hair’

The use of *-en* forms in singular contexts exceeds target use in plural contexts to the greatest degree at age 1;11. This peak in overgeneralized use of *-en* forms does not only correlate in time with the peak in the use of *-en* tokens (figure 1) but also with the development of verb types produced in only one inflectional form (cf. table 4 below). The proportion between the number of verb types only attested by an *-en* form and the number of verb types only attested by a *-t* form shows an increase in *-en* types right at the age of 1;10–1;11. At 1;10, this increase results from the appearance of *-en* forms with verbs formerly exclusively attested as a *-t* form. With this development, the amount of verb lemmas only attested by a *-t* form diminishes. However, at age 1;11.6, 35 new verb lemmas are attested. 20 of these 35 lemmas are produced in their *-en* form exclusively. By contrast, only 5 of the 35 new lemmas are produced in their *-t* form exclusively. The higher frequency of *-en* types with new lemmas continues at 1;11.20 (8 *-en* types vs. 3 *-t* types) but disappears at 1;11.30 (8 *-en* types vs. 9 *-t* types). Table 4 gives the calculation for all verb lemmas exclusively attested as *-en* or *-t* form up to the respective point in time.

Table 4. number of verb lemmas attested by only one inflectional form

age	1;8.10	1;8.29	1;9.14	1;10.0	1;11.6	1;11.20	1;11.30	2;0.5	2;0.29
-en	11	10	10	10	27	12	12	12	37*
-t	5	8	8	3	6	5	10	4	8
new lemmas	(25)	15	21	11	35	19	22	15	43

(*spurt in target like infinitives)

For the time being, it can be summarized that three pieces of evidence – a) development of token frequency (figure 1), b) non-target use of *-en* forms (figure 2), and c) development in lemmas exclusively used as *-en* types (table 4) – have been found in the data which suggest that the *-en* form is chosen as the preferred form in Anna’s verb production around the age of 1;11. It is used irrespective of the person-number features of the (potential) subject phrase. Rather, the child seems to interpret the *-en* form as the prototypical form of the verb which is appropriate for all types of utterances. In section 5.1.1, I will argue that the described processes indicate that the *-en* form has been established as the default form of the verb in the child’s grammar.

4.2 Early use of *-t* forms

Figure 1 shows that there is a relatively high token frequency for *-t* forms at the onset of verb production. In accordance with Ingram and Thompson (1996) (and also Jordans 2002 for

Dutch), I assume that the acquisition of these early *-t* forms is based on rote learning of highly frequent verb types. They are holistic, i.e. unanalysed forms.

The increase in the use of *-en* forms at age 1;10–1;11 causes a (proportional) decrease in the use of *-t* forms. Only around the age of 2;0, does token frequency of *-t* forms rise again (cf. figure 1). This spurt is accompanied by an increase in verb lemmas attested with two inflectional forms. Comparing phase I and phase II, the highest rise in numbers of lemmas emerges with contrasts involving an *-en* and a *-t* form, cf. table 5.

Table 5. total number of verb lemmas with contrasting inflectional forms⁵

age	number of VU	-en/-t	-en/-∅	-t/-∅	-en/-t/-∅	-en/-t/(-X ⁶)
1;8–1;10	279	4		3	3	
1;11–2;0 ⁷	882	18	5	1	10	4

Verbs attested as *-en* and *-t* forms are, for instance:

- (3) *machen* – *macht* ‘to do’
bauen – *baut* ‘to build’
malen – *mal* – *mal* ‘to draw’

Target use of *-t* forms occurs in 3rds and 2ndp position (cf. table 1).⁸ In German child language, non-target use of *-t* forms is rare in comparison to that of *-en* forms. However, certain instances are usually attested. The most frequent is the production of *-t* forms instead of full (i.e. prefixed) forms of the past participle (i.e. *macht* ← *gemacht* ‘to do - done’). Anna starts producing prefix *ge-* after the age of 2;1.13. However, before and after that point in time, *-t* forms used in contexts other than 3rds very likely replace target past participles (27 tokens), cf. (4).⁹ Additionally, more than 50% (43 tokens) of the *-t* forms occurring in utterances where the (intended) subject remains unclear would be a past participle in adult language, cf. (5).

- (4) *auch ein geld gebt* [← *gegeben*] ‘(I) also (have) given money’
du weint? [← *geweint*] ‘you (were) crying?’
essen einkauft [← *eingekauft*] ‘(we have) bought food’

⁵ Each verb lemma was counted only once. Thus, the numbers of verb lemmas for the columns *-en/-t*, *-en/-t/-∅* and so on does not include the same verb lemmas.

⁶ The position of X can be filled by past participles or forms ending in *-e* or *-st*.

⁷ For a more appropriate base of comparison in terms of analysed verb utterances (VU), the following intervals in the period of 1;11–2;0 can be distinguished:

age	number of VU	-en/-t	-en/-∅	-t/-∅	-en/-t/-∅	-en/-t/(-X)
1;11.6–1;11.20	312	10	1	1	4	2
1;11.30–2;0.5	282	5	2		5	
2;0.29	288	7	3		4	2

⁸ In line with other investigations on the acquisition of German verb inflection, no utterances containing a subject in 2ndp are attested in the data of Anna.

⁹ There are only 3 instances of a *-t* form which clearly do not replace a past participle. All of them occur at the age of 2;3 in 2nds contexts.

- (5) *schon auspackt* [← ausgepackt] ‘unwrapped already’
runtermacht papier [← runtergemacht] ‘put away the paper’
hier malt [← gemalt] ‘drawn here’

Reduced forms of past participles are also attested in analytic constructions which emerge at age 2;0. Development in the command of analytic constructions does not immediately lead to the use of prefixed past participles.¹⁰ 53% (50 tokens) of the respective past participles lack the prefix. 34 of these tokens are forms ending in *-t*. Past participles ending in *-en* can compensate the lack of the prefix by stem vowel change. Thus, only 17% (3 tokens) of the respective past participles ending in *-en* remain without any target perfect marking (i.e. prefix or stem vowel change). Conversely, about 45% (31 tokens) of the hypothetical past participles ending in *-t* remain without a target marking for perfectivity, cf. (6).

- (6) *lange spielt* [← gespielt] *haben* ‘(we) have played a lot’
(ge)schichte malt [← gemalt] *haben* ‘(we) have drawn a picture story’
gestern hab ich zuguckt [← zugesehen] ‘I watched (it) yesterday’

A further observation is that past participles which end in *-en* in adult German are sometimes replaced by a *-t* form (*gibt* ← *gegeben* ‘to give’) whereas no vice versa tendency (*-en* forms replacing past participles ending in *-t*) is attested.¹¹ In the investigated data, 13 unprefixated forms which very likely replace an adult past participle in *-en* are produced as a *-t* form, cf. (7). Among the prefixed forms are 23 which end in *-en* in adult German, 6 of them are overgeneralized by a *-t* form, cf. (8).

- (7) *Opa gibt* [← gegeben] ‘grandfather (has) given’
meine (st)rumpfhose aufresst [← aufgefressen] ‘(crocodile has) eaten up my tights’
runderfallt [← runtergefallen] ‘(it has) fallen down’
- (8) *wieder umefallt* [← umgefallen] *bin* ‘fallen down again’
wieder ei(n)fach wieder auserisst [← herausgerissen] ‘torn out again’
die hat das aufgefressst [← aufgefressen] ‘it (the giraffe) has eaten it up’

It has been argued that the emergence of *-t* forms in positions of target past participles results from restrictions in production capacities of the child, especially phonological restrictions for unstressed syllables (cf. Weyerts and Clahsen 1994; Clahsen and Rothweiler 1993). However, a clear distribution in the omission of the prefix is worth noting. In the data of Anna, the prefix almost only occurs with complex verb forms. i.e. verbs composed of a stem and a verb particle, cf. *abmachen* ‘to put away’, *umfallen* ‘to fall over’, *wegwerfen* ‘to throw away’ but hardly ever with simple verbs, cf. *machen* ‘to do’, *fallen* ‘to fall’, *werfen* ‘to throw’. Table 6 presents a calculation about all verb forms in analytical constructions attested in the recordings from 2;1.27 onwards, i.e. the point in time when the prefix became frequently produced.

¹⁰ Note, that of the two target structures of perfect tense, *sein* ‘be’ + past participle and *haben* ‘have’ + past participle, only the latter becomes productive. The auxiliary *sein* ‘be’ is only frequent as a simple predicate.

¹¹ Jordens (2002) found the same for the acquisition of Dutch.

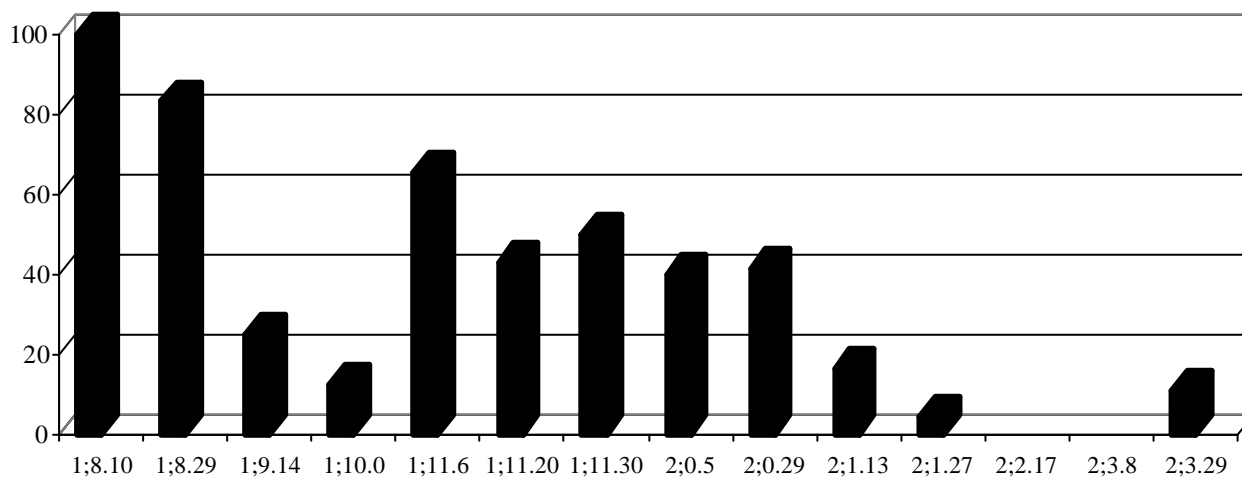
Table 6. distribution of the past participle prefix *ge-* over verbs with/without a particle attested in analytic constructions since 2;1.27 (token numbers)

	+verb particle	-verb particle
+past participle prefix	40	4 ¹²
-past participle prefix	5	40

The distribution within analytical constructions is confirmed by verb forms showing prefix *ge-* but lacking the auxiliary, cf. *um(g)efallt wieder* ‘fallen over again’, *mir zucker reinemacht* ‘(I) put in sugar’. Among the 23 attested forms there are only 3 simple verbs. Obviously, the use of prefix *ge-* is related to the structural complexity of the verb. Its appearance improves the prosodic pattern of a complex verb by inserting an unstressed syllable: primary accent syllable – unstressed syllable – secondary accent syllable. Its omission avoids a prosodic structure which is dispreferred in German, i.e. the iambic structure ‘unstressed syllable – primary accent syllable’. After all, a grammatical specification for prefix *ge-* is quite questionable.

Coming back to the use of *-t* forms, figure 3 shows that in parallel to the development described so far, overgeneralization of *-en* forms disappears from 3rds contexts, i.e. from the target context of *-t* forms. It is worth noting that the reduction of *-en* overgeneralizations starts shortly after the first increase in *-t* tokens around age 2;0 and proceeds up to their next increase between age 2;1.27 and 2;3.8 (figure 1) which is also the period of frequent use of *-t* forms for all types of potential past participles.

Figure 3: overgeneralization of *-en* forms in 3rds position (%)
(100% = total number of overgeneralized *-en* tokens)



Summing up the observations on the acquisition of *-t* forms, it can be assumed that their use becomes restricted to a certain type of utterance around the age of 2;0. From the very beginning, *-t* forms are preferably used in utterances with a (potential) 3rds subject, i.e. in its target agreement position. However, the early functional interpretation of *-t* forms seems to allow its overgeneralization to contexts other than 3rds when the verb refers to a situation or state of affairs which is of perfective (completed) nature, i.e. to contexts where adults would

¹² All these four forms are attested in the last recording at 2;3.29. It is highly likely that they mark the onset of the extension of the past participle prefix to verb forms without a verbal prefix.

use a past participle. In section 5.1.2, I will argue that 3^ds references and references to perfective/completed states share common features which allow a unified form-function mapping for *-t* forms in this early phase of language acquisition.

4.3 Early use of stem forms (-Æ)

Starting with figure 1 again, one finds that the token frequency of stem forms rises later than that of *-en* and *-t* forms. Only at the age of 2;1 does the use of stem forms reach the stable amount of 20% of all verb tokens. This observation is confirmed by the development of inflectional contrasts. In phase I, only 8 verb lemmas contain a stem form among their contrasting inflectional forms. In phase II, this is already the case for 22 verb lemmas, and in phase III, an increase up to 34 verb lemmas is attested. As table 7 highlights, this development mainly proceeds within binary form contrasts.

Table 7. Number of verb lemmas with contrasting inflectional forms

	number of VU	-en/-t	-en/-t/-X	-en/-∅	-t/-∅	-st/-∅	-en/-t/-∅/{+X}
1;11-2;1 ¹³	1091	19	5	8			12
2;2-2;3	1186	6	3	10	3	2	11

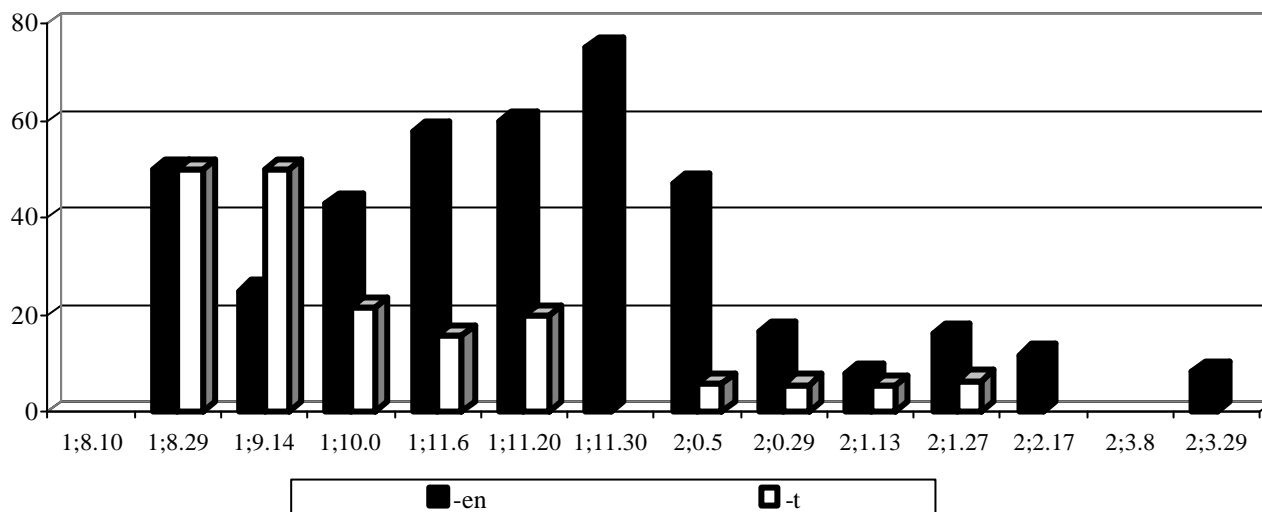
Under (9) some examples for verb lemmas attested with a stem form among its contrasting inflectional forms are given.

- (9) *holen* – *hol* ‘to fetch’
reingeht – *reingeh* ‘to go in’
abwaschen – *abwascht* – *wasch ab* ‘to wash off’

Table 7 reveals that the number of verb lemmas with a binary contrast of *-en* vs. *-t* forms decreases from phase II to phase III. On the one hand, this logically follows from the acquisition of other inflectional forms for verb lemmas previously exhibiting these two forms only. On the other hand, it indicates that the child in general gains command of a more complex repertoire of inflectional forms.

Stem forms are target like in contexts which requires the 1sts.pres.ind. or the 2nds.imperative. These contexts are affected by the overgeneralization of *-en* forms discussed in section 4.1. Additionally, 1sts contexts are affected by the overgeneralization of *-t* forms discussed in section 4.2. Figure 4 shows the development of overgeneralization of both forms in the context of 1sts.pres.ind. over time.

¹³ The recording of age 2;1.27 was analysed as part of the time period 2;2-2;3 in order to reach a more balanced proportion of data between the two periods.

Figure 4 : *-en* and *-t* forms in 1sts contexts (%)(100% = total number of 1sts contexts)

At age 1;8.29, only two utterances with an intended subject in 1sts are produced – one *-en* form and one *-t* form. At age 1;9.14, 9 productions are attested (2x *-en*, 5x *-t*). From the recording at age 1;10.0 onwards, a more considerable number of productions emerges. In accordance with the picture sketched in figure 1 and with the described development in the use of *-en* forms, an increasing amount of *-en* overgeneralizations can be observed up to the age of 1;11.30. Overgeneralization of *-t* forms is less frequent but is stable up to the age of 1;11.20. Its disappearance from 1sts contexts starts right at the point in time when the first increase in token frequency of *-t* forms is observed (figure 1). However, a small amount of *-t* overgeneralizations remains up to the age of 2;1.27 but completely disappears in the next recordings. This disappearance coincides with the second spurt in token frequency of *-t* forms (figure 1).

Overgeneralization of *-en* forms is much more frequent and lasts longer than that of *-t* forms. This is in line with the discussed development in the use of *-en* forms. However, decrease of this type of overgeneralization also starts around the age of 2;0. The rapid decrease between age 2;0.5 and 2;0.29 correlates with the first increase in token frequency of stem forms (figure 1).

Finally, an observation concerning the acquisition of the target imperative form shall be mentioned. Anna, in general, prefers *-en* forms to utter requests and wishes. Thus, in phase I, only one target imperative form is attested (*guck* ‘look’). This form is frequent in use and can be interpreted as rote learned. In the three recordings of age 1;11, three further imperative types appear in the data (*ess* ‘eat’, *halt* ‘stop’, *komm* ‘come’). However, the increase of stem form tokens and of stem forms in inflectional contrasts around age 2;1 is accompanied by an increase in target imperative forms too. In the three recordings between 2;0.29 and 2;1.27, a further 8 lemmas with the target imperative form are attested, cf. table 8.

Table 8. number of new lemmas with target 2nds.imp. form (i.e. stem form)

phase	I:	II:	III:				
age	1;8-1;10	1;11	2;0.5	2;0.29	2;1	2;2	2;3
number of VU	279	845	292	288	842	315	955
new lemmas	1	3	/	3	5	/	4

It can be summarized that the stem form becomes regularly used slightly later than *-en* and *-t* forms. In contrast to these forms, it does not occur in overgeneralizations but merely in the target contexts of 1sts.pres.ind. and 2nds.imp. Its rise in token frequency drives out *-t* and *-en* forms from overgeneralizations to 1sts contexts. In section 8.3, I will argue that the use of the stem form suggests a clear specification to speaker related and uncompleted states.

5 Discussion

5.1 Hypotheses on early form-function mapping

The observations in the use of the *-en*, *-t* and stem forms (*-∅*) described in section 4 suggest a stepwise development in form-function mapping for the respective forms. The order and the surface content of the observed processes are:

- (10) a) around age 1;11 - general preference for verbs ending in *-en*,
- b) around age 2;0 - correlation of *-t* forms with 3rds contexts and completed state of affairs,
- c) around age 2;1 - correlation of stem forms with 1sts contexts and imperatives.

In the following sections, hypotheses on form-function-mapping for each of the three forms will be discussed. Furthermore, I will show in which respect the early form-function mapping is based on an aspectual interpretation of input forms.

5.1.1 Form-function-mapping for the *-en* form: Selecting a DEFAULT form

As has been found in the data analysed in this study as well as in other studies on the acquisition of verb inflection in German, the *-en* form is not restricted to a certain type of person-number context in early child language. It is a highly frequent form appropriate to all types of context. Obviously, agreement constraints are not productive in the child's early grammar. The optional infinitive hypothesis suggests that the unconstrained use goes back to a lack of obligatoriness for the assignment of tense or agreement features. Child grammar is viewed as incomplete or defective in this respect. Under this perspective *-en* forms lack any functional mapping. They merely occur because of their frequency in the input but remain functionally unspecified. I will argue for the opposite view.

There is a clear difference in the use of verb forms at the onset of verb production and that which emerges by the developments described in section 4.1. In the beginning, both *-en* and *-t* forms are used relatively frequently. Then, a spurt in the frequency of *-en* forms accompanied by a decrease in the frequency of *-t* forms arises. This change occurs at the time when the mark of 100 attested verb lemmas has been reached (cf. table 4), i.e. at a level which can be considered a critical mass causing a reorganization of relevant domain(s). By choosing the *-en* form as the preferred form in the production of verbs, the domain of the verb becomes separated from other domains of the lexicon. I hypothesize that this is the content of the first mapping process with respect to verbs in the child's grammar: The *-en* form is mapped to the function of assigning a verb or a verbal concept. Nothing less and nothing more. Thus, the hypothesis with respect to the first step in form-function mapping in verb inflection is:

Hypothesis I:

*The first step in form-function mapping in the acquisition of German verb inflection is the interpretation of the suffix *-en* as an assignment of [+V], i.e. *-en* symbolizes that the actual referent of the lexical item is to be perceived as a state of affairs existing in time and carried out by an individual.*

The emerging generalization is: Words ending in *-en* assign a verb or a verbal concept, in short */-en/* → [+V]. This involves the recursion that [+V] is to be assigned by suffix *-en*. The learning mechanism is not based on rote learning alone anymore but is, at least partially, based on a generalization about the function of “verb-being” and a certain word shape. That only “verb-being” is specified and nothing more explains the appropriateness of the *-en* form for all types of context, i.e. the observed overgeneralizations. The *-en* form becomes established as the DEFAULT-form of the verb in the child’s grammar.¹⁴

5.1.2 Form-function mapping for the *-t* form: Selecting a DISTANCE marker

Clahsen (1990) proposed that *-t* is interpreted as symbolising intransitivity or low transitivity in early child German. This has been a matter of some debate, cf. Weissenborn (1990), Jordens (2002). However, *-t* forms are partly used in a different way than in adult language and, thus, the question remains in which respect *-t* forms are of a different nature in this early period than in adult language. It will be shown that an answer to this question is related to the aspectual nature of early grammaticalization in child language.

The change in verb use which follows the selection of the default form is the increase in token frequency of *-t* forms. In contrast to the *-en* form, the *-t* form is used in particular types of utterance. These are utterances with an (intended) subject phrase in 3rds, and utterances which refer to the completion of an event. The *-t* forms in 3rds contexts are target like. With completed events, simple *-t* forms like *sag-t* ‘says’, *schlaf-t* ‘sleeps’ are not target-like but, rather, they replace the target perfect tense construction consisting of a finite auxiliary and the past participle of the verb. These analytic constructions, i.e. the structure haben ‘have’ + past participle, -become considerably more frequent only at age 2;2. Finally, the phonologically conditioned distribution (cf. section 4.2) of the past participle prefix *ge-* suggests that this marker is still not mapped to the assignment of perfectivity. This leaves us with the question as to whether perfectivity, i.e. the completion of an event, is regularly marked in the child’s early grammar.

Besides prefix *ge-*, the following markers occur (in simple and analytic constructions) within perfective contexts: *-en* and *-t* suffix and stem vowel change (SVC). According to hypothesis I (cf. section 5.1.1) and also according to other hypotheses such as, for instance, the optional infinitive hypothesis, the *-en* ending of irregular past participles cannot be considered a perfectivity assignment. Stem vowel change is restricted to irregular verbs, i.e. verbs of which the past participle form ends in *-en*. With these verbs, the concrete type of vowel alternation has to be learned by heart. Thus, the respective forms are very likely objects of rote learning. There remains just the suffix *-t* which is the regular ending of the past participle and which is overgeneralised to irregular past participles (cf. section 4.2). Overgeneralisation of *-t* has been observed in analytic constructions (cf. (8)) as well as in the single use of lexical verbs describing completed events (cf. (9)). From the observed pattern, one can conclude that overgeneralisation of *-t* shows an affinity with the assignment of perfectivity.

Does this contradict the use of *-t* in 3rds contexts? Here, we come back to the perceptual base of grammatical features described in section 1.1. 3rd person is the term for a narrated participant which does not belong to the speech participants. Referents of the 3rd person are necessarily perceived from a distance (i.e. from an outside perspective, Leiss 1992). Referents of the 3rds are perceived as complete objects, i.e. as contoured or bounded wholes. This is the property the category of 3rds shares with perfectivity. The referents of perfective constructions

¹⁴ Clahsen (1988) also proposed a default status of the *-en* form in this early phase, however, without an emphasis of an underlying form-function mapping which separates the early rote learned *-en* forms from the later forms with default status.

are complete(d) events as well. Consequently, both the categories 3rds and perfect tense assign the perception of the referent from a distance, as contoured or bounded wholes. Thus, a unified interpretation for their common marker *-t* is available to the child.

The resulting hypothesis on form-function mapping for the *-t* form is:

Hypothesis II:

The second step in form-function mapping in the acquisition of German verb inflection is the interpretation of the inflectional suffix -t as an assignment of [+distance]. Suffix -t symbolises that the referent is to be perceived as at a distance from the speaker or the situation of speaking; i.e. as a completed or bounded whole.

The proposed hypothesis suggests that the child unifies the function of two categories which seem to be clearly distinguished in the common analyses of the adult language. Two things are worth noting. First, it has been shown that the two categories, 3rd person and perfect tense (or in a broader sense perfective aspect) share common features if they are considered and analysed from a perceptual point of view. That they share a structural morphological means, the *-t* suffix, is an iconic representation of this commonality. Under the assumption that the child starts form-function mapping from the available cognitive space, i.e. from cognitive-semantic categories, rather than from a language internal structural analysis (cf. section 1.1) an early detection of the assumed commonalities is plausible. However, the second point to note concerns the acquisition of categories. There is only evidence for the acquisition of a category or the activity of a category in the child's grammar when a structural opposition (i.e. subcategories) is productively established. In the present case, the target categories person and tense are involved.

With respect to tense, the shifting from the time of speaking to a fictive time of observation of the reported state of affairs is requested. In other words, a structural means which indicates that the time of observation is different from the speech time has to be used productively. The analyses show that no such opposition is involved in the use of the verb forms of the investigated period. This is in accordance with the pragmatic scope of the child's utterances of this period. Typically, they report states of affairs which are either (i) hypothetical (questions, requests etc), (ii) proceed simultaneously to the time of speaking, or (iii) are still becoming completed or having visible results at the time of speaking.

The results of the analyses suggest that the category of person is also not established as a relevant category of verb use at the very early phases. The form-function mapping for the *-en* and the *-t* form do not include the distinction of participants. With *-en* this should be of no controversy, but it might be a surprising suggestion for *-t*. However, should *-t* assign [+distance], as the above hypothesis II suggests, no clear evidence is given that the child distinguishes linguistically between an assignment of the quality of the event and the quality of the subject referent. The perception of the subject referent as at a distance to the speech participant(s) goes along with the perception of the performed action from a distance. At least, this is the typical coincidence with verbs which are non-ergative and in active voice. A further argument for an event-oriented interpretation of the *-t* form is the emergence and frequent use of personal and demonstrative pronouns in subject position at age 2;0. By those means, the distinctions between the person categories are assigned and the child presumably does not expect repeated assignment at the verb itself.

The above considerations lead to the conclusion that the only distinction which is made by the *-t* form is whether the situation of speaking is perceived as included in the reported state of affairs or excluded from it, i.e. whether an inside or an outside perspective is given. More precisely, the opposition consists in the relevance of an outside perspective on the reported state of affairs (*-t* suffixation) vs. no relevance (no *-t* suffixation). More or less, this

opposition assigns what Jakobson called the quality of the reported event and the content of the aspect category. The characterisation of the feature [+distance] as connected to a perspective from which the referent appears as completed or bounded reveals the aspectual value of the form-function mapping for *-t*. After the discrimination of verbs from other types of lemmas by the first step in form-function mapping, the second step establishes an aspectual distinction in the child's verb grammar. By this step, a certain functional opposition and, consequently, a certain functional (sub)domain within the domain of verb grammar is opened. The latter is the subdomain of verb forms referring to completed or bounded referents. The former is the opposition of the assignment of the perceptual feature [+distance] (in addition to [+V]) vs. non assignment of this feature. The use of the default form for verbs in general becomes less appropriate in the more specific subdomain. This explains the observed decrease in the use of *-en* forms in 3rds contexts (figure 3) and the overgeneralisation of suffix *-t* with verbs assigning states of affairs which are to be perceived from a distance. In analogy to Antinucci and Miller (1976), it can be stated that the use of the *-t* form has more of an aspectual than of a temporal or person related value.

5.1.3 Form-function mapping for the *stem* form: Specifying a NON-DISTANCE form

The emergence of the feature [+distance] as a relevant feature in the domain of verb grammar causes the expectation that the remaining areas in this domain are related to the opposite feature, i.e. non-distance. However, Jakobson (1936, 1941) has shown that grammatical oppositions do not have the character of bi-directional exclusions but, rather, of privative oppositions. A grammatical form not specified for the feature [+distance] does not highlight whether or not [+distance] or [-distance] is one of the perceptual features of the referent. The feature is simply of no relevance in such cases. That the *-en* form becomes prototypically (but not exclusively!) used with referents to be perceived as non-distant is merely because of the established sign relation whereby relevance of [+distance] is symbolised by suffixation of *-t*. The former is an unavoidable consequence of the latter. At the actual stage of development (described as phase II in section 3.2), this holds for all non-*t* forms: their correlation with [-distance] becomes prototypical although the feature (still) does not constitute a functional specification of the respective forms.¹⁵

Nevertheless, according to the principle of maximal opposition in the emergence of categorical systems (Jakobson 1941), the next step in form-function mapping concerns the domain of non-distance. Perceptual non-distance is maximal in the case of perspectivisation of the speaker or the situation of speaking. The speaker cannot perceive itself or the situation s/he is performing from a distance, i.e. from an outside perspective as a contoured or bounded whole. The central and unmarked position of the speaker within the situation of speaking and among the speech participants is iconically marked by the less complex form within the verbal paradigm of the adult system. The observations presented in section 4.3 verify that the stem form becomes associated with this type of perception around age 2;1. Stem forms are mainly used in the target contexts of 1sts and 2nds.imp. The formal identity and the observed parallels in the development from the use of the default form to the use of the stem form in both contexts again suggest a unified functional interpretation. The stem form becomes mapped not to the symbolisation of 1sts in particular but, more generally, to the feature [-distance] which is a perceptual feature of both of the target categories. The 1sts and the imperative include that the object of reference is the speaker or the speaker-related verbal action. In the case of 1sts, this is of no controversy. In the case of 2nds. imp, the verbal event affects and relates the ultimate participants of the situation of speaking; the speaker as the one

¹⁵ It is worth noting that a privative opposition may change towards a bi-directional opposition by grammaticalization processes in language history.

who demands an action and the hearer as the one who should act it out. Additionally, this event is not completed at the moment of speaking.

The resulting hypothesis on form-function mapping for the stem form is:

Hypothesis III:

The third step in form-function mapping in the acquisition of verb inflection in German is the interpretation of the stem or -Æ form as an assignment of [-distance]. The stem form assigns that the actual referent is not to be perceived as at a distance from the speaker or the situation of speaking, i.e. as incomplete or unbounded.

The verbal paradigm in the child's grammar now consists of:

- (11) a) a base form which only specifies that a verbal action is assigned,
- b) a specific form additionally assigning that the referent is to be perceived as a complete or bounded whole, i.e. as at a distance to the situation of speaking and its participants, and
- c) a specific form additionally assigning that the referent is to be perceived as incomplete or unbounded, i.e. as at no distance to the situation of speaking or its participants.

In terms of grammatical features, this can be summarised as follows:

- (12) *-en* : [+V]
- t* : [+V] [+distant]
- stem* : [+V] [-distant]

Assuming that these forms do not assign person, because this category is clearly symbolised by the obligatory subject, their functional focus lies in the quality of the verbal action.¹⁶ Thus, the third step in form-function mapping completes the aspectual specification of verbal states of affairs initiated by the aspectual interpretation of the *-t* form.

5.1.4 Excursus on the acquisition of the present tense paradigm

Summing up the hypotheses on form-function mapping presented in the previous sections, the paradigm of the present tense forms is build up by the following steps:

- (13) a)

+V
<i>-en</i>

- b)

+ V	
[+distance]	
<i>-en</i>	<i>-t</i>

- c)

+ V	
[+distance]	
<i>-en</i>	<i>-t</i>
[-distance]	<i>-Æ</i>

Two things are interesting to note. First, the presentation shows that the *-en* form remains a default form in the sense that it undergoes no further specification but assigns only the general

¹⁶ The person categories are merely implicitly assigned by the verbal forms.

feature [+V]. This means that the symbolisation of the 1st and 3rd plural is given by the subject phrase only, without any support of the respective verb forms which end in *-en*. Second, one cell remains empty in the last version of the paradigm (cf. (13c)). This cell becomes filled by the *-st* form in the next step of acquisition of the present tense forms. At first glance, the functional specification of this form looks contradictory. The empty cell lies in the domain of both of the features [+distance] and [-distance]. However, this is what the complexity of the *-st* form (which is iconically reflected by the complexity and heaviness of the suffix) consists of. The second person is located at the same time inside the situation of speaking ([-distance]) but outside of its central participant, the speaker, ([+distance]). Consequently, the final paradigm of the present tense forms in terms of the relevant perceptual features is as follows:

(13) d)

		+ V	
			[+distance]
	<i>-en</i>		<i>-t</i>
[-distance]	<i>-Æ</i>		<i>-st</i>

The question remains of whether this paradigm can also provide an adequate analysis of (the acquisition of) the 2nd plural form which also ends in *-t*. In keeping with what has been reported for other corpora of German child data, this form is not attested in the data of Anna either. However, it can be assumed that the form-function mapping for this form does not contradict the structure of this paradigm but, rather, it is already grasped by it. Typologically, there are languages which clearly distinguish all person-number forms¹⁷ in addition to languages which show some syncretism in the verbal paradigm. Syncretisms are caused by ignoring or underspecifying categorial distinctions which are represented somewhere else in the categorial system. The presence of the two different values of [±distance] in the perceptual features of the hearer and the verbal actions performed by the hearer gives rise to two possibilities for underspecification: formal identity of the forms of 1st + 2nd person on the basis of the common feature [-distance], or formal identity of the forms of 2nd + 3rd person on the basis of the common feature [+distance]. German exhibits the latter opposition by assigning *-t* to the forms correlating with the 2nd person, cf.¹⁸

(14)

[-distance]	1 st pers	<i>mach-Æ</i>	mach-en
[+distance]	2 nd pers	<i>mach-st</i>	<i>mach-t</i>
	3 rd pers	<i>mach-t</i>	mach-en

In line with the highest perceptual complexity of the category of 2nd person, the form of the 2ndp is the only verb form correlating with plural subjects which is different from the default form, i.e. which bears a specification with respect to the perspectivisation of the verbal event.

6 Conclusions

The present paper aimed to show that early form-function mapping of verb forms in German is based on perceptual features which inform the hearer how to imagine the referents of the

¹⁷ These are the languages typically show pro-drop properties. Here, the verb forms bear the symbolisation of the person and number categories.

¹⁸ It is interesting to note that non-target forms in 2nds position are initially only *-en* forms. However, at age 2;0.29, stem and *-t* forms also occur. None of the three forms disappears from this context during the investigated period.

reported state of affairs. The investigated data motivate the hypothesis that the present tense forms are first mapped to perceptual features which are aspectual in nature. The first opposition assigned by the present tense forms is the perception of the verbal event and its central participant as distant vs. non-distant from the situation of speaking and its central participant. The perception of something from a distance allows it to be perceived as a contoured and bounded whole, i.e. with respect to verbal events, as complete(d). On the contrary, the perception of something as included or involved in the situation from which perception starts, i.e. as non-distant, does not allow it to be perceived as bounded whole; it can only be perceived as uncontroled, i.e. with respect to verbal events, as incomplete(d).

Traditionally, the present tense forms of the German verb are regarded as agreement markings, i.e. as assignments of the person-number categories of the subject. It has been argued here that this is only a secondary function of the verb forms. Evidence comes first from the target system: a) there is no unambiguous correlation between the partly syncretistic verb forms and the person categories; b) the obligatory subject phrase provides a fully explicit assignment of each person category. Second, this assumption is supported by the acquisition data, especially by the parallel developments in the use of the *-t* form in 3rds and in perfective contexts and the parallel developments in the use of the stem form in 1sts and imperative contexts. The unified functional interpretation of these forms preconditions an abstraction from the category of person. However, in section 5.1.4, it has also been shown that not only the quality of the verbal event but also the person categories are basically distinguished by the feature opposition +/-distance. And this is not only because of the necessary connection of these two domains. Moreover, the opposition of +/-distance or +/-bounded or +/-complete seems to be based on a very general perceptual distinction. Grammatical and typological research has shown that there are further domains in grammar that are basically built up on a distinction of this nature, cf. the difference between mass and count nouns, singulars and plurals, accusative and partitive/genitive case (Krifka 1989; Leiss 1992; Bittner 2002). A lot of evidence has been accumulated that supports the hypothesis that the categorial system of each language is hierarchically organised and contains a basic level of general oppositions shared by the different categorial domains. Under the assumption that this basic level is derived from general perceptual features, it provides the universal starting point in the construction of grammar.

These considerations lead back to both Jakobson's model of grammar in general and of the system of verb categories in particular as well as to the language acquisition model of Slobin briefly described in section 1. The present results are in accordance with Jakobson's argument that aspect is the basic grammatical category of the verb. Although there is no aspect category in the German verb system, in the sense that a certain structural distinction exclusively related to assignment of aspect exists, children nevertheless interpret the verbal distinctions provided by the input in an aspectual manner. According to the above considerations on the general perceptual character of the first grammaticalized oppositions, there is no other possibility. Furthermore, Jakobson's thoughts on meaning in language and on the semiotic nature of grammatical structure (cf. Jakobson 1965) meet Slobin's hypothesis that the first form-function mappings in language acquisition start from universal cognitive-semantic features. The present findings on form-function mapping in the early acquisition of verbs in German support this hypothesis by showing that it is very likely that universal perceptual distinctions constitute the starting point of grammaticalization in first language acquisition.

Finally, it should be emphasised that the point of view taken in this analysis and especially the conclusions drawn here do not completely contradict other hypotheses on the issue of verb form acquisition. On the contrary, the varying findings in the literature are to a great deal compatible. For instance, Jordens (2002) reported a correlation in the use of finite forms

which are mainly 3^ds with states and change of states, and a correlation of infinitive forms with intended states of affairs in early Dutch. This seems to be largely compatible with the original assumption of Clahsen (1988, 1990) that the *-t* suffix is mapped to low transitivity in German child language. As discussed by Jordens, on the one hand, the features of transitivity and of intention correlate, and on the other hand, the features of state/change of state and intransitivity correlate. Moreover, it can be added that intentions typically concern the speech participants (especially the speaker) and their acting upon a certain object whereas what is reported about a 3^d person referent is typically a state or a change of state the referent undergoes. Clahsen's notion of 'transitivity' and Jordens' notion of 'intention' thus correlate with particular person categories. However, given the correlation between person and [\pm distance] that has been argued for here, their respective notions thus also correlate with the perceptual features which have been claimed in the present paper to build the starting point of grammaticalization in language acquisition.

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As said above, the target structure for expressing perfectivity is the analytic construction. In (12), examples for the four main types of analytic construction in the child's grammar are listed.

- (12) a) regular verbs with a particle: aux + ge- + -t
hast *das* *(ka)putt(g)emacht*
 have-2S.PRES.IND it break-PP
 '(you) have broken it'
- b) regular verbs with no particle: aux + -t
die *hat* *schubst*
 she have-3S.PRES.IND push-PP
 'she has pushed (me)'
- c) irregular verbs with a particle: aux + ge- + SVC¹⁹ + -en
die *hab* *ich* *weggeschmissen*
 it have-1S.PRES.IND. I throw away-PP
 'I have thrown it away'
- d) irregular verbs with no particle: aux + SVC + -en
hab *auch* *ein* *tee* *trunken*
 have-1S.PRES.IND also a tea drink-PP
 '(I) have drunk a tea too/I had a tea too'

¹ For a more appropriate base of comparison in terms of analysed verb utterances (VU), the following intervals in the period of 1;11–2;0 can be distinguished:

age	number of VU	-en/-t	-en/-Ø	-t/-Ø	-en/-t/-Ø	-en/-t/(-X)
1;11.6–1;11.20	312	10	1	1	4	2
1;11.30–2;0.5	282	5	2		5	
2;0.29	288	7	3		4	2
2;1.13	209	4	3	1	5	1

¹⁹ SVC = stem vowel change.