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Plurals in child speech*

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ABSTRACT

The development of plurals in two German-speaking children was analysed, based on observational data. It was found that (1) plurals were supplied in 90% of the obligatory contexts somewhere between Stage IV and Stage V; (2) plurals were not functionally distinguished from singulars, occurring also in singular contexts; (3) the predominant morphological deviations were of the type in which an additional plural marker was attached to an already correct plural; (4) referring to a single object or event, formally correct plural utterances were often constructed, partly because of as yet unestablished verb conjugation rules. It was argued that the children were learning plurals by rote, conditioned by morphological complexity which cannot be subsumed under any general rule.

Although there are some systematic studies of the acquisition of German syntax, morphological development has so far remained unexplored. Park (1971) reported some findings on the acquisition of German plurals, but the data were too fragmentary to provide a proper picture of developmental trends. Nonetheless, the study clearly demonstrated German-speaking children's difficulty in learning plurals: children roughly estimated to be in Stage II¹ were unable to tell plurals from singulars, producing such utterances as *ein Männer* 'a/one men', *zwei Mann* 'two man' and *zwei Männer* 'two men'. The present study intends, on the one hand, to determine the extent to which the observation applies, and on the other hand, to pursue the development of plurals up to Stage V in a systematic way.

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[1] The German data, part of which is treated in the present study, has not yet been completely analysed, nor is there any comparable study available. It is therefore unclear to what extent Brown's (1973) characterization of stages applies to German language development. Yet as far as Stages I and II are concerned, his characterization fits well with the data: major semantic relations were expressed in Stage I, and various grammatical morphemes generally began to appear in Stage II.

SUBJECTS

Data were obtained by a longitudinal study in naturalistic situations which was originally conducted to assess the development of syntax in two High German-speaking children and two Swiss German-speaking children living in the vicinity of Bern, Switzerland. All of the children were from middle-class families with at least the fathers having an academic background. Apart from one High German-speaking child (third-born) the children were first-born, each having a sib. They were physically normal and there was no impression of any mental retardation. Ages were 1 ; 9, 1 ; 9, 2 ; 0 and 2 ; 5 at the first recording.

METHOD

Video-recordings were made in each child's home, with the mother as the major play partner. The first recordings lasted about 45 minutes. Since utterances produced by the children in a single session were too small in number, totalling at most 160, including single words, the recording period was doubled, which, along with the children's growing linguistic ability, brought about considerable increase in utterances. Yet the children rarely produced more than 600 utterances per session (one taciturn child 400), even in Stage V. The recording at first took place every two weeks, but the interval was later increased to four weeks and subsequently to eight weeks, so that transcription could keep pace with the recordings. During the whole period of observation, language development covered Stages I-IV in the Swiss German-speaking children and Stages I-V in one of the High German-speaking children, whereas the other High German-speaking child, starting from Stage III, reached Stage V towards the end of the observation.

STRUCTURAL FEATURES OF GERMAN PLURALS

German has a number of plural markers with more or less limited application. The following illustration contains markers which most frequently occur in adult speech (they are also in fact the markers that were used by the children):

	Singular	Plural	Marker
(1)	(a) der Onkel (the uncle)	die Onkel	Ø
	(b) die Mutter (the mother)	die Mütter	umlaut
(2)	(a) der Hund (the dog)	die Hunde	-e
	(b) die Hand (the hand)	die Hände	-er + umlaut
(3)	(a) das Kind (the child)	die Kinder	-er
	(b) der Mann (the man)	die Männer	-er + umlaut
(4)	(a) die Blume (the flower)	die Blumen	-n
	(b) die Klammer (the clip)	die Klammern	-n
	(c) das Ohr (the ear)	die Ohren	-en
(5)	das Auto (the car)	die Autos	-s

All of the singulars and most of the plurals appeared in the children's utterances.

Apart from Ø, the plural markers consist of umlaut and allomorphs. Umlaut is applied to three vowels, *a*, *o* and *u*, but its occurrence is quite unsystematic. The plural of *Mutter* 'mother' is marked by umlaut, but not that of *Onkel* 'uncle'. The position of the vowels has nothing to do with this differential marking, as is apparent from the fact that out of *Hund* 'dog' and *Hand* 'hand' of Category 2, only *Hand* additionally shows umlaut in pluralization. Furthermore, the plurals of nouns belonging to Categories 4 and 5 never show umlaut. Clearly, the presence or absence of umlaut is not rule-governed.

As for the allomorphs, there are four suffixes; *-e*, *-er*, *-en/-n* and *-s*. Again it is not possible to specify differential use of the suffixes, except that nouns ending in *-e* take *-n* (but this does not mean, conversely, that this suffix is added only to nouns ending with *-e*). As far as the young child is concerned, if the plural of *Kind* 'child' is *Kinder*, the plural of *Hund* 'dog' and that of *Hand* 'hand' could be *Hunder* and *Hander/Händer*, respectively. Or conversely, *Kinde*, instead of *Kinder*, could be the plural of *Kind*. *Klammern* 'clips' is the plural of *Klammer*, but *Mutter* 'mother' and *Onkel* 'uncle' are each pluralized as *Mütter* and *Onkel*. To mark these nouns with *-s* as in *Autos* 'cars' would be another possibility; *-s* is usually reserved for foreign words, but *Jungs* is used, parallel to *Jungen*, as the plural of *Junge* 'boy'.

In summary, German plurals may show zero suffixation, or umlaut or one of the four suffixes *-e*, *-er*, *-en/-n* and *-s*, each with or without umlaut. However, there is no single statement, morphological or phonological, which can be consistently made with regard to which marker should be attached to which noun.² In other words, the various plural markers have no functional interrelation.

RESULTS

Level of the acquisition of plurals

According to Brown (1973), one of his subjects, Sarah, could be said to have acquired English plurals as early as Stage I, and the other two subjects, Adam and Eve, by Stage II and Stage III. In each case the criterion was that plurals were supplied in at least 90% of the obligatory contexts. I tried to apply the

[2] There are a number of morphologically based rules. To give a few examples: nouns ending with *-keit* and *-tion* invariably receive the marker *-en*, as in *Neuigkeit*, 'news' vs. *Neuigkeiten*; and *Nation*, 'nation' vs. *Nationen*; nouns ending with *-tum* are always marked by *-er* as in *Irrtum*, 'mistake' vs. *Irrtümer*; nouns ending with *-nis* are always marked by *-se* as in *Kenntnis*, 'knowledge' vs. *Kenntnisse*. However, they are all either derived or foreign words, which occurred neither in the children's speech nor in the mothers' sentences.

same criterion, for cross-linguistic comparison, but found that there was some difficulty in defining 'obligatory context'. Diminutives, a noun form most favoured by German-speaking children, especially in the early stages of language development, cannot be pluralized. The same is true of such nouns as *Wagen*, 'car' and *Esel*, 'donkey', which have no plural forms but which very frequently occurred in the data. Swiss German is even more abundant in this kind of uninflected noun than High German; e.g. *Schuh/Schuhe* 'shoe/shoes' in HG vs. *Schue/Schue* in SG; *Apfel/Äpfel* 'apple/apples' in HG vs. *Öpfel/Öpfel* in SG. As a result, if an uninflected noun occurred in a plural context, it was impossible to decide whether the noun was actually used in the plural function. In order to get over this difficulty, the notion of obligatory concept has to be limited to those utterances which contained nouns that have two distinct forms for the singular and the plural function.

Because of this unavoidable limitation, the available data were very small in number. No child produced a single plural in Stage I. Virtually the same could be said of Stage II. Even in Stage III, plurals totalled only 6, 13, 3 and 7 for the four children (the number of utterances including single words amounted to 568, 625, 1004 and 1681 in the two Swiss German-speaking and the two High German-speaking children respectively; the number of recordings was not the same). In Stage IV the picture was not basically different for the two Swiss German-speaking children, who produced only 13 and 12 plurals in corpora totalling 1,785 and 1,327 utterances. Also in Stage IV, diminutives were still dominant in the SG data, while, in contrast, they were considerably decreasing in the HG data. Because of the low frequency of plural forms, the data of the Swiss German-speaking children were eventually discarded.

TABLE I. *Plurals as a function of obligatory context and stage*

	Age	Stage	Obligatory contexts	Plurals used
Kathrin	2; 7.3 to 3; 0.2	IV	22	19 (86 %)
	3; 1.1 to 3; 5.0	V	54	49 (91 %)
Björn	2; 8.0 to 3; 2.0	IV	63	56 (89 %)
	3; 4.0 to 3; 7.3	V	59	53 (90 %)

Plurals obtained from the two High German-speaking children in Stages IV and V are summarized in Table I. They were taken from a sample of 1,163 utterances (including single words, which were the least frequently observed in the four cells). Plurals had increased significantly, compared with Stage III; but the frequencies are still not as large as might be expected considering the size of the sample. This was mainly caused by the fact that pronouns, which were constantly increasing up to Stage III, dominated in Stages IV and V,

replacing nouns which would otherwise have occurred as plurals. An analysis of the development of singular and plural pronouns might be undertaken, but the relevant pronouns were all of the type in which the singular and plural functions are not differentiated, e.g. *das* – the predominant one – and *diese*. *Das* stands for singular or plural nouns in all three gender categories, and *diese* for singular feminine and plural nouns. *Diese* can be disambiguated by gender, but even in Stage V the children were a long way off from the acquisition of gender.

As is apparent from Table 1, it was not until Stage V that Kathrin and Björn could reach the acquisition level of 90%. Yet percentages calculated with frequencies considerably less than 100 are not very accurate measures (this is especially true of Stage IV, in which the percentages, if just one more plural were added, would exceed the criterion). An interpretation adequate to the findings is that the criterion was first attained by the children somewhere between Stages IV and V. Evidently, both children had considerable difficulty in learning plurals, compared to the English-speaking children studied by Brown (1973). But this is not surprising, considering that German plurals are more complex than English plurals. Possibly, the relative acquisition lag in Kathrin and Björn is idiosyncratic. Unfortunately, no comparable study is available.

Functional characteristics of plurals

Adults use a plural if the relevant linguistic and/or situational context refers to more than one instance. But this basic rule did not always apply to the children's use of plurals. Their speech actually contained more plurals than are given in Table 1, since plurals occurred in both plural and singular contexts. There were, for example, such utterances as:

- (1) da Kinder (here children) pointing to a doll.
- (2) ein Schweine (a/one pigs) nomination.
- (3) meine Stühle (my chairs) bringing a chair.
- (4) eine Pferde (a/one horse) pointing to a wooden horse.
- (5) da kommt Gläser (here comes glasses) putting a piece of a jigsaw puzzle in the appropriate place.

The correct singular forms are *da Kind*, *ein Schwein*, *mein Stuhl*, *ein Pferd* and *da kommt Glas*. In Stages I and II, plurality was realized in plural contexts by singulars. This relation was reversed after plurals appeared in the children's utterances, as the singular function was fulfilled also by plurals. The data are summarized in Table 2. Kathrin, who attained the 91% level in Stage V, used plurals in as many as 29 contexts in the singular function, slightly more than one third of the total contexts, and Björn, who came off better than Kathrin, used 13 plurals in singular contexts, which account for 20% of the total contexts. Thus, in respect of functional distinctiveness, neither of the children,

with a best performance of 80%, can be regarded as having acquired plurals even by Stage V.

A close examination of the data further revealed that some types of plurals occurred only in plural contexts, and some only in singular contexts, while some others occurred in both plural and singular contexts. Kathrin used 19, 11 and 11 plurals respectively, in plural, singular and plural/singular contexts, in Stages IV and V combined (the same nouns often appeared in both stages); and Björn used 39, 10 and 10 plurals in the same way. On the surface, this seemed tied to some generic categorization of nouns by children; however, analysis of the nouns with regard to semantic features proved unrevealing. An examination of the utterances excluded from sampling (the cut-off point was 1163 utterances, cf. above) showed that the occurrence of the three types of plurals was a result of sampling limitation: some of the only-plural-context plurals appeared also in the singular function in the excluded utterances, and conversely, some of the only-singular-context plurals were used also in plural contexts.

TABLE 2. *Plurals in terms of semantic function*

	Stage	Number of tokens	Singular contexts	Plural contexts
Kathrin	IV	32	13 (41%)	19 (59%)
	V	78	29 (37%)	49 (63%)
Björn	IV	72	16 (22%)	56 (78%)
	V	66	13 (20%)	53 (80%)

The use of plurals in both singular and plural functions indicates that plurals were not learned as the functional counterparts of the singulars but simply as nouns referring to the same things or events as the corresponding singulars. The acquisition of plurals seems to be accounted for in terms of rote learning. But there is a suggestion that the children also tried to proceed somewhat systematically as will be seen below.

Formal characteristics of plurals

The children's plurals included many morphological deviations. These are summarized in Table 3. Sometimes mass nouns such as *Wasser*, 'water' and *Zucker*, 'sugar' were pluralized by adding *-s*, but they were excluded from Table 3 (also from Tables 1 and 2). The deviations accounted for about one fourth of the plurals that occurred in plural contexts.

Füss 'feet', *Küh* 'cows', *Stühl* 'chairs' and *Kätze* 'cats' seemed to be derived analogously to *Mütter* 'mothers'; and *Onkels* 'uncles' analogously to *Autos* 'cars'. In *Bauern* 'farmers', *Engeln* 'angles', *Igeln* 'hedgehogs' and *Stiefeln* 'boots' the uninflected nouns were superfluously suffixed with *-n*.

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But what is striking is the fact that in most of the deviations Kathrin and Björn added the plural marker *-n*, not to adult singulars, but to noun forms which are in themselves correct plurals. From the viewpoint of adult grammar, the line singulars were simultaneously provided with two types of plural markers: correct marker and *-n*. Thus, e.g. *Freunden* ‘friends’ was derived by (*Freund*+*e*) +*n*, *Kindern* ‘children’ by (*Kind*+*er*)+*n*, and *Stühlen* ‘chairs’ by (*Stuhl*+umlaut+*e*)+*n*. It might be argued that *Freunden* is derived by suffixing,

TABLE 3. *Morphological deviations of plurals (used in plural contexts)*

Kathrin	Stage		Björn	Stage	
	IV	V		IV	V
<u>Freunden</u> ^a (friends)	—	1	<u>Freunden</u> (friends)	—	2
<u>Haaren</u> (hairs)	—	1	<u>Hörnern</u> (horns)	1	—
<u>Hunden</u> (dogs)	—	4	<u>Kindern</u> (children)	1	—
<u>Männern</u> (men)	—	1	<u>Kühen</u> (cows)	3	—
<u>Nüssen</u> (nuts)	—	1	<u>Leuten</u> (people)	3	3
<u>Säcken</u> (sacks)	—	2	<u>Männern</u> (men)	1	—
<u>Schweinen</u> (pigs)	—	1	<u>Pferden</u> (horses)	—	1
<u>Stühlen</u> (chairs)	1	—	<u>Rädern</u> (wheels)	2	—
<u>Bauern</u> ^b (farmers)	1	—	<u>Schafen</u> (sheep)	—	1
<u>Engeln</u> ^b (angels)	—	1	<u>Tieren</u> (animals)	1	3
Füß (Fuss/Füsse) ^c (feet)	1	—	<u>Igeln</u> ^b (hedgehogs)	1	—
Küh (Kuh/Kühe) ^c (cows)	1	—	<u>Stiefeln</u> ^b (boots)	1	—
Stühl (Stuhl/Stühle) ^c (chairs)	—	—	<u>Onkels</u> ^b (uncles)	1	—
			<u>Kätze (Katze/Katzen)</u> ^c (cats)	—	1

[a] Underlining indicates that the plural marker has been superfluously added to a correct adult plural.

[b] The plural marker has been attached to an uninflected noun.

[c] Correct singular/plural forms in parentheses.

instead, *-en* – one of the plural markers – to *Freund*; but *-ern* in *Kindern* cannot be a single suffixal element. Moreover, Kathrin and Björn used also correct plurals, parallel to the ‘double-marked’ ones. Incidentally, this parallel use of correct plurals and erroneous ones applied to all of the deviations in Table 3.

Thus, the children had in their lexicon two or three types of plurals for the same singular noun: e.g. *Kinder/Kindern* 'children', *Stühle/Stühl/Stühlen* 'chair', *Kühe/Küh/Kühen* 'cows', *Männer/Männern* 'men', *Füsse/Füss* 'feet' and *Bauer/Bauern* 'farmers'.

The addition of *-n* is a direct reflection of the children's inability to distinguish plurals from singulars in adult speech. As was mentioned above, nouns corresponding to adult plurals were used by them in singular contexts; i.e. these forms were functionally singulars for the children. As a result, they added the marker, not to adult singulars, but to the 'functional singulars' operative in their grammar. On the other hand, the consistent use of *-n* seems to indicate that the children were growing aware of the plural being derived from the singular and were attempting to operate with some productive rule to realize plurality in a systematic way.

Plurals in syntactic contexts

According to Cazden (1973), English-speaking children find it more difficult to supply plural markers if number agreement is to be made across a noun phrase boundary than within a noun phrase. For example, a noun is more easily pluralized within a NP such as *some* + N than within a nomination utterance type such as *those my* + N. In the former, the number of N is determined by the immediately preceding *some*, whereas in the latter the number of N must agree with that of *those* across the NP boundary. Apparently, the acquisition of plurals is partially a function of syntactic context. Yet this kind of across-boundary analysis could not be made with the present data, since the subject pronoun most favoured by Kathrin and Björn in nomination type utterances was *das*, which applies to the plural as well as to the singular, regardless of gender of the predicate noun.

Concerning number agreement, there is, however, another aspect of syntax which was not treated by Cazden: the number of the subject noun or that of the predicate noun in nomination type utterances governs the inflectional form of the main verb or the copula verb. German verb inflections for the Present include four suffixes to be attached to the verb stem: *-e* (1st Person Sing.), *-st* (2nd Person Sing.), *-t* (3rd Person Sing. and 2nd Person Plural) and *-en* (1st and 3rd Person Plural, and Infinitive). As for the Copula, the inflectional forms are *bin* (1st Person Sing.), *bist* (2nd Person Sing.), *ist* (3rd Person Sing.), *sind* (1st and 3rd Person Plural and *seid* (2nd Person Plural), *sein* being the infinitive. Among these, only the distinction between the inflectional forms for the 3rd Person, *-t* vs. *-en* and *ist* 'is' vs. *sind* 'are' comes into question, since the others are tied to particular personal pronouns.

From the samples, those constructions were singled out which contained the subject, the main verb/copula verb and the predicate, and in which the crucial category was a plural noun. Pronoun constructions, which were pre-

dominant in Stages IV and V, were ignored. Modal+main verb constructions were also discarded, although modals are inflected in German.

Utterances obtained in this way amounted to 45 and 51 for Kathrin and Björn in Stages IV and V combined. Yet an analysis of the utterances in terms of whether the N-V agreement rule was observed yielded the result that only 23 constructions approached their adult models for Kathrin, and 34 constructions for Björn. The performance appears in still worse light if semantic contexts are taken into account. For example, there were such utterances as

- (6) *das sind Kinder* ('these are children')
- (7) *dort sind die Kühe* ('there are the cows')
- (8) *die Hunden kommen auch rein* ('the dogs come also into')
- (9) *so machen die Hoppe-Pferden* ('so do the hop-horses')
- (10) *die Kinder hinsetzen in Auto* ('the children sit-down in car').

In (8) and (9) *-n* was added to adult plurals, *Hunde* and *Hoppe-Pferde*, and in (10) a reflexive pronoun and an article were omitted. Besides, the prefix *hin-* was not moved to occupy sentence-final position. Apart from these minor errors, the utterances are all acceptable, and might have been produced in plural contexts by adults. However, they all referred to singular contexts. For example, (6) was produced as Kathrin was pointing to her own recently taken photograph hanging on the wall, and (10) was produced as she was putting only one doll in the car. Likewise, only one cow, one dog and one horse were referred to in the respective situational contexts in which (7), (8) and (9) were produced. This kind of semantic incongruity was infrequent in Björn, occurring in only 3 (out of 34) utterances, but in Kathrin it accounted for over one third of her formally correct utterances (9 out of 23).

Needless to say, the semantic incongruity was caused, in addition to the children's use of plurals in singular function, by their insufficient knowledge of verb conjugational rules. In order to determine their acquisition level of verb inflections, Stage V samples were analysed with regard to the extent to which the verb marker for the 3rd Person Singular, *-t*, and the copula verb form for the 3rd Person Singular, *ist*, were supplied correctly in the relevant linguistic contexts (plurals in the singular function were not taken into account). Kathrin supplied *-t* and *ist* to the same degree in 66% of the obligatory contexts, and Björn supplied them in 75 and 69% of the obligatory contexts. Neither of the children can be regarded as having acquired the conjugational rule. It is not surprising that they produced formally correct plural utterances in inappropriate singular contexts.

DISCUSSION

Assuming cognitive development to be prerequisite for the acquisition of grammar, Slobin (1973) proposed some cognitive strategies, or 'operating principles', which the child is believed to apply to the task of learning language. His operating principle concerning morphological development runs: 'Pay attention to the ends of words.' What is meant by this is that, should the same grammatical realization be achieved by, say, prefixes and suffixes, suffixes will be learned earlier than prefixes. Since German plural markers include no prefix, the principle cannot be assessed directly from the data discussed here. However, the fact that Kathrin and Björn had difficulty in telling plurals and singulars apart can hardly be kept in line with the principle. The children's productive rule may be attributed to the principle, since *-n* is one of the plural markers, but a major difficulty is that the resulting 'double-marked' plurals to which they are supposed to have paid attention are non-existent in the children's linguistic environment.³ Moreover, the plurals, *Füß* 'feet', *Küh* 'cows', *Stühl* 'chairs' and *Kätze* 'cats' were marked merely by umlaut, without the required suffix *-e* (in spite of *Katze* v. *Katzen*, cf. Table 3).

Slobin's principle is based on the assumption that the ends of words are perceptually salient. However, this does not apply to German plural suffixes. In order for them to be perceived as such, the suffixes must have some distinctive phonological features, but in reality singulars and plurals very often, on the surface, share the same endings. It is probably almost impossible for children to draw a distinction between the plural marker *-er* of, e.g. *Männer* 'men' and *Kinder* 'children' from the ending of singulars such as *Mutter* 'mother' and *Klammer* 'clip', or between the plural marker *-e* of, e.g. *Hunde* 'dogs' and *Hände* 'hands' from the ending of singulars such as *Blume* 'flower' and *Hase* 'rabbit'. The difficulty is further increased by the occurrence of uninflected nouns, which make up a significant part of the children's lexicon. It may be noted here that even adults learning German as a second language confuse plurals with singulars, e.g. *Ich habe eine Kinder* 'I have a children'.

Reportedly, English-speaking children have considerable difficulty in learning the plural suffix *-iz/* (cf. Anisfeld & Tucker 1973, Berko 1958). There is a simple explanation. Since *-iz/* is attached to nouns ending with sibilants and affricates, the children possibly regard such singulars as plurals because of the final sibilants which are, on the surface, identical with the proper sibilant plural suffixes, *-s/* and *-z/*.

There is a suggestion that, confronted with unknown nouns, German-speaking children model plurals on uninflected nouns. I carried out an informal

[3] If plurals occur in the dative case, they are additionally supplied with *-n*, but the recordings of the mothers' speech rarely included such forms.

Berko-type experiment with a five-year-old girl; at first, the child was asked to form plurals of *Kind* 'child', *Glas* 'glass' and *Haus* 'house', and she responded correctly with *Kinder*, *Gläser* and *Häuser* (the child never produced erroneous plurals of other nouns in her spontaneous speech, as far as I could observe casually). Afterwards, she was shown a nonsense figure I called *Paus*, whose name she repeated at my request. Then I gave her another *Paus* and asked, 'Here is another *Paus*. Now you have two what?'. The answer was *zwei Paus* 'two paus'. In the wake of the three immediately preceding examples which were intended to encourage the child to form a plural analogically, especially since *Paus* differs from *Haus* only in the initial phoneme, the child could have easily produced *zwei Päufer* or *zwei Pauser*. A repetition of the experiment with another five-year-old girl yielded the same result. The same applied also to a second-grade boy, who even rejected my suggestion that *zwei Päufer* was the 'correct' plural. Only an adult (a colleague) produced a seemingly marked form *Pause*, after brief consideration; but this is a real word meaning 'rest' (the plural form being *Pausen*) that he hit upon while in search of an adequate marker, as he confessed. He was quick to add that he did not know how to pluralize *Paus*. Anyway, he was not much inclined to accept my proposal of *Päufer* or *Pauser*. What is suggested by this informal experiment is that the failure to supply a plural marker had its root in the complex structural features of German plural markers and had nothing to do with any cognitive factors.

If German plurals are not clearly perceptible as distinct from singulars, children are at first most likely to learn plurals simply as nouns synonymous with their respective singular counterparts. As a result, the plural function cannot be differentiated from the singular one, both being fulfilled by either singulars or plurals. With growing linguistic development, however, children will come to realize that plurality is expressed by adults in a different way from singularity, and they will direct their attention to the adult linguistic means of expressing plurality. Identification of a particular noun form as the plural of a particular noun is achieved by situational as well as linguistic contexts. In contrast to situational contexts, linguistic contexts are not very transparent, since in German not only verbs, but articles, attributive adjectives and demonstrative and possessive pronouns are, with all of their inflectional forms determined by Case and Gender, involved in marking Number. And there are various plural markers which have no functional interrelation, so that no pattern is recognizable concerning which marker belongs to which noun. Not only is the learning of plurals difficult, but also no systematic approach is possible. Plurals are learned in functional isolation from their singular counterparts, and continue to occur in both singular and plural contexts. Differentiation of the plural and the singular function is reached only after a one-to-one association is firmly established between one form and one function, so that the morphological relation between plurals and their respective singular counterparts is clearly grasped. Rote

learning is a very tedious process. With reason, Kathrin and Björn had much difficulty in learning plurals.

Ervin (1964) pointed to the role of analogy in children's acquisition of plurals. According to her, children's extension of, e.g. *box-boxes* to *foot-footses*, or their regularization of the plurals for *man* and *foot* into *mans* and *foots*, is attributable to analogy. Yet there is no statement here as to whether correct plurals are also formed by analogy. Apart from that, the findings of the present study can hardly be brought in line with the notion of analogy. Analogy presupposes an analysis of a plural form into its components, singular + plural marker. The use of plurals in the singular function, however, indicates that this presupposition was not met. The 'double-marked' plurals, the predominant form of morphological deviations, do not even have analogic counterparts. If anything, the five deviations, *Füßs* 'feet', *Küh* 'cows', *Stühl* 'chairs', *Kätze* 'cats' and *Onkels* 'uncles' may fit into the notion of analogy. In sum, even if analogy was operative in Kathrin and Björn, its operation seemed limited to a minimum.

The way plurality is realized differs for each language. Some languages have plural markers available but in others the 'singular' form stands also for plural function (e.g. Korean and Japanese). And within the former type of language the nature of plural marking is again different from language to language. In English, the operation of plural markers is contingent on particular phonological conditions so that there is a discernible functional relation among the markers; but this is not the case with German plural markers, whose occurrence is not specifiable in any one particular way. The English plural-marking rule is thus a 'functional' one, whereas its German counterpart is a 'descriptive' one, in the sense that it merely classifies nouns in terms of shared marker. With regard to this differentiation of marking rules, it is possible to generalize the earlier argument concerning the development of German plurals to the effect that the mode of learning plurals is a function of the nature of marking rules, such that under 'functional' rule conditions the learning is in the main rule-governed, while under 'descriptive' rule conditions rote learning is the major determinant of the acquisition process.

MacWhinney (1965) seems to have obtained findings rejecting this line of inference, however. According to him, Hungarian children's acquisition of plurals goes through five stages, whereby *Stage V⁴* is the most complex one, including most pluralization rules each of which seems to apply to a small number of nouns. And as far as can be seen from his illustrations, the plural-marking rules are all 'descriptive' ones. One cannot see how, e.g. the five allomorphs, *-k*, *-ök*, *-ek*, *-ok* and *-ak*, are used differentially. The same applies to a number of phonological rules which additionally come into operation to form

[4] The term *Stage* is italicized here to distinguish it from the *Stage* defined in terms of MLU.

some plurals. In terms of our statement above, this is precisely the condition in which rote learning has decisive impact upon the learning of plurals, but MacWhinney came to the conclusion that his findings could be accounted for in terms of rule operation, and the role of rote learning and analogy was argued to be minimal. It is therefore necessary to scrutinize his data.

In his experiment a real Hungarian noun and a rhyming nonsense noun paired with it were presented in immediate succession for pluralization to 18 children ranging in age from 2; 1 to 3; 8 (initially 25 children, but seven were unable to pluralize nonsense nouns). There were a total of 15 pairs assigned to *Stages II-V*, 1, 2, 5 and 7 pairs for each stage.

The real nouns were pluralized correctly by 100%, 78%, 75% and 13% of the children in the four stages. Applying the Cochran Q test yielded a significant inter-stage difference, which was interpreted as showing that the acquisition was rule-governed, since rote learning would have produced undifferentiated levels of performance. However, his data show very strong inter-item variation, amounting to as much as 33% within the same stage (*Stages IV and V* in particular). Under such circumstances, no reliable inter-stage comparison can be made if the number of items within a stage is not only so small but also varies so radically from 1 to 7. There is too great a latitude for sampling bias. An adequate interpretation of the findings is that, although there seems to be some difference between *Stages IV and V*, the performance remains in general at the same level. This means that rote learning played a far more important role than rule-operation in the learning of the real plurals.

As for the children's performance on the nonsense nouns, analogic plural formation accounted for 84%, 72% and 64% in *Stages II, III and IV* (MacWhinney made no distributional analysis of the data, and the calculation of the percentages is mine). In *Stage V* the real nouns were pluralized incorrectly much more frequently than they were correctly (correct pluralization was 13%), but the morphological deviation was not random, centring instead on a particular form for each real noun. These dominant – but erroneous – plural forms accounted for 71% of the data, while the plurals formed similarly from the nonsense nouns represented 75%. The performance on the nonsense nouns not only shows no reliable inter-stage difference but also matches that on the real nouns (the largest inter-stage difference in the nonsense nouns amounts to 12%, and the largest difference between real and nonsense nouns – in *Stage II* – is 16%. Both can be ignored in view of the strong inter-item variation and the very small number of subjects on which the percentages were calculated). This is a strong indication that analogy played a decisive role in forming the plurals of the nonsense nouns.

A reanalysis of MacWhinney's data leads therefore to a conclusion running counter to his own: the effect of rote learning and that of analogy seem to have been far greater than the effect of rule-operation. Unfortunately, no comparison

can be made between rote learning and analogy since in his experiment the former referred to the learning of real plurals while the latter applied only to nonsense nouns. Consequently, the question as to whether analogy played a part also in the learning of real plurals, a question pertinent to the present study, remains open.

Apart from analogy, the dominant role of rote learning as evidenced by this reanalysis provides evidence in support of the theory derived from the categorization of plural-marking rules into 'functional' and 'descriptive' types. The descriptive nature of marking rules is shared by German and Hungarian, and, like Kathrin and Björn, Hungarian children relied on rote learning in acquiring real plurals. The nature of plural-marking rules is thus a decisive aspect which should be seriously taken into account when considering the child's learning of plurals in cross-linguistic studies.

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