

DERIVATION AND SIMPLIFICATION
BY ADOLESCENT DIOULA SPEAKERS

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1. Introduction

This paper is based on part of the research for my dissertation, done in Ivory Coast during the period of October 1970 through July 1972, and supported by grants from Stanford University. The research took place in Bouaflé, a medium sized town near the center of the country, with a mixed ethnic population. The general purpose of the research was to compare Dioula as it is spoken by primary speakers with the Dioula spoken as a second language in inter-ethnic communication. In this particular section, evidence was found of simplification comparable to that found in many pidgin languages. The Dioula language is part of Mandingue, of the Mande sub-group of Niger-Congo. Dioula is also called Malinké and Bambara, depending to some extent on social and geographic factors. The examples of derivation were elicited with an oral questionnaire which was tape recorded. This particular section of the questionnaire consisted of sentences to be translated from French to Dioula. The other parts of the questionnaire, including lexical items and free questions, were elicited in Dioula. Judging from the lack of French borrowings, either lexical or structural, the use of French did not seem to influence the derivation responses. All the speakers were first and second year pupils at a local secondary school, about 14 to 15 years old. The speakers were divided into two groups: The first group, D-I, was comprised of pupils who spoke Dioula as their first language. They were chosen to create a balance in what are reported to be geographic dialect areas according to their respective regions of origin. The second group, D-II, were speakers from other ethnic groups who spoke Dioula as a second language. In this case the group was balanced according to the primary language of the speaker. The D-I group had eleven speakers, the D-II thirteen.

2. Derivation in Dioula

The formation of new words by affixation is a rich process in Dioula.

Dumestre [1970] gives six "derived" or "integrated" verbals and twenty-two nominals in his grammar of Dioula. In the present study I have considered both derived (derivation with no change in word class) and integrated (derivation with a change in word class) words together under the title of derivation. I chose to investigate fifteen derivations cited by Dumestre (see Appendix). These fifteen derivations appear to be fairly frequent. They are found not only in Dumestre's grammar, but also in the Delafosse [1955] dictionary. While Delafosse marked some derivations as rare in his dictionary, none of these fifteen were so marked. I have no other information, however, that indicates the frequency of these derivations in current Dioula speech. For this reason, the overall percentages of use for any derivation in this research cannot be adequately evaluated. The interest lies in those derivations where the two groups differ in frequency of use, and especially in those derivations where the difference is a qualitative difference in formation.

One other problem deserves mention. The purpose of the test was to determine the speakers' ability to use certain derivational affixes. Real words in Dioula were used instead of nonce forms, as it was felt that the speakers would not respond to nonce forms. It was therefore possible for the speakers to produce a derived word as a vocabulary item without knowing the derivational process. For many items in the test, the responses were so varied that vocabulary learning did not seem to be influential. In other cases the base morpheme was sufficiently uncommon to minimize this effect also. In two cases, where one word of a derivation was consistently given correctly and the other word not at all (/dumuni/ 11.b. and /sigilan/ 15.a.), these two words were considered to have been learned as vocabulary, and thereby eliminated from further consideration.

In Dioula it is also possible to derive new words by suffixing lexemes. The lexemes /ɕe, muso/ 'man, woman' are often suffixed to animate lexemes: /dɔgɔ-ɕe/ 'little brother', /kɔrɔ-muso/ 'elder sister', /so-muso/ 'mare', /misi-muso/ 'cow'. The D-II group often used this process, though the lexemes they affixed were not ones normally used by Dioulas. In addition to lexical derivation, there are other compound words which are unique, such as /nɛgɛ-so/ 'bicycle', from /nɛgɛ/

'metal, iron, and /so/ 'horse'.

Similar word formation is found in other languages of this sub-group. For Susu, a language from Guinea closely related to the Malinké group, Houis [1963] gives six derivations of lexical origin, of which two do not have corresponding free lexemes now, and seven other derivations created by affixation. One of the derivations of lexical origin (but without a current corresponding lexeme), /-ka/ 'locative of origin', is cognate with /-ka/ from Dioula. Another lexical derivative, /-di/ 'diminutive', is probably cognate with /dǝ/ 'child in Dioula, which is sometimes used as a diminutive, in the sense of 'offspring of', such as /misi-dǝ/ 'calf'.

3. Results of the Tests of Derivation

3.1. General results. An analysis of variance with unequal N's was done for each derivation separately; the sum of the means for all derivations was calculated and the two groups were compared on this basis also (see table 1). Group D-I (N 11) are the primary language speakers; Group D-II (N 13) are the vehicular language speakers. The speakers had from one to three attempts (depending on the derivation) to give the correct form. The percentage of correct responses for each speaker was noted, then converted by an arc sine value for the purpose of the analysis of variance.

Those derivations where the between group variance has a lesser probability than 1% were derivations known fairly well to members of D-I, and almost not at all to those of D-II. The variance on the sum of derivations also had a less than 1% probability. Those derivations where the between group variance has a probability of between 1% and 5% were derivations known to members of group D-I to some extent, and almost not at all to those of D-II. The derivations having a greater than 5% probability of between group variance were known very little or not at all to either group, although this last set of results is mixed. It should be noted that all significant (less than 5%) variances favor the D-I group.

It should be remembered here that these results are based on a test of production and not of comprehension. It is possible that the speakers, especially those of D-I, understood more derivations than they ordinarily

Table 1: Analysis of Variance--Tests of Derivations

Derivation	Number of trials per speaker	(1) group % of correct responses		critical value of F
		D-I (N 11)	D-II (N 13)	
2. Verb redup.(2)	2	0%	4%	
4. Adj. /man/	1	0%	0%	
5. Augment.	2	77%	42%	
6. Dimin.	2	9%	4%	
10. Verb /man/	1	45%	15%	greater than 5%
11. Verb /li/	3	42%	33%	
12. Verb /ball/	2	0%	0%	
13. Verb /len/	2	0%	0%	
15. Instrumental	2	36%	23%	
3. Adj /ya/ (verb)	3	37%	10%	5%--1%
7. Origin	1	36%	0%	
1. Trans. verb	2	41%	0%	
8. Ord. Num.	1	91%	8%	
9. Adj /ya/ (nom)	2	59%	8%	less than 1%
14. Agentive	2	50%	1%	

- (1) These percentages are of course not used in the analysis of variance. They are given here only to provide the reader with a more precise indication of the direction of the variance than would be provided by "low use, high, etc."
- (2) See Appendix for a fuller description of the derivations. Numbers refer to the number of the derivation in the Appendix.

produced. Also, the expression asked for can often be rendered in other ways than by a derivation. Sometimes the so-called "wrong answers" denote lack of response; the speaker simply said he didn't know. However, many of the "wrong answers" were paraphrases expressing, some better than others, the requested idea. These alternate answers will be discussed further below. The more interesting results of the present research having to do with simplification were found in these alternate answers.

3.2. Results by derivation

3.2.1. Derivations with no significant between group variance. Derivations 2, 4, 6, 12, and 13 had very low scores for both groups. Derivation 2, reduplication of the verb to express a repeated action, was not used, but reduplication of other forms was quite frequent. The two sentences should have been:

(2a) /a ka sogo tige tige/
'he cut the meat into little pieces' (/tige/ 'cut')

(2b) /a ka a sen ko ko/
'he kept washing his feet again and again' (/ko/ 'wash')

For the first sentence, most speakers added the word 'little' /fitini/ and repeated it without repeating the verb, i.e.:

/a ka sogo tige fitini fitini/

For the second sentence, there was more variety in the answers, but often the speaker repeated the whole predicate, also adding other words, i.e.:

/a ka a sen ko...ka a sen ko/

Only one speaker, from group D-II, repeated the verb alone.

Derivation 4, adjectival plus /-man/ to form a nominal, was not used. The speakers, especially those of D-I, often changed vocabulary to contrast the sentences. The sentences elicited were:

(4a) /a gbã no/ 'it is hot'

(4b) /gbã-man lo/ 'it's the heat'

The speakers used the adjectival /gbã/ for the first, then made a

sentence with the noun /tɪlɛ/ 'sun' for the second.

Derivation 6 was the diminutive /-nin/. To express the diminutive the speakers used either /fitini/ 'little' or /deni/ 'child'. The final syllable of these words resembles the diminutive, but the two words are autonomous morphemes. Group D-I used the two words appropriately. That is, /deni/ was always used for 'puppy' (i.e. /wulu-deni/), and sometimes for 'little bird', interpreting 'little' to mean 'baby'. /fitini/ was sometimes used with bird, interpreting 'little' as size, but was never used for 'puppy'. Members of D-II, however, generalized /fitini/ as a diminutive marker, using it for 'puppy' and 'little bird' indiscriminately. There was very little use of /deni/ by group D-II. /fitini/ was probably generalized by group D-II simply because it is a very frequent word in Dioula, and is well known by everyone. Even foreigners who know no more than ten words in Dioula know /fitini/. This word is also used as a brand name of infants' wear sold by the Chaine Avion stores throughout the country. In the lexicon section of the research, two D-I speakers used the diminutive /-nin/ for 'path', but no D-II speaker did so.

Derivation 12, a verbal plus /-bali/ meaning 'deprived of, lacking', was not used at all, nor was Derivation 13, a verbal plus /-len/ to form a nominal. Derivation 13 will be further discussed with Derivation 11.

Derivations 10, 11, and 15 were used somewhat by the two groups. That Derivation 10, a nominal formed from an integrated verbal plus /-man/ was used at all is remarkable, because no speaker used a very similar derivation, that of nominal from adjectival plus /-man/ (4). One case of an 'integrated verbal' given by Dumestre [1970:49] was an 'adjectival plus \emptyset ', so it is not evident why the nominalization of an adjectival and that of an adjectival plus \emptyset have given such different results. In the discussion of these two derivations in Dumestre [1970:52-53], two classes of adjectives were implied. This is so because the integrated verbal had two translations of 'it is black': /a ka fin/ adjectival, and /a fin na/ verbal. 'It is sweet' had only one, the adjectival /a ka di/. One would like to know which adjectives can be verbals, which cannot, and if it was

this difference that was significant in the results of the speakers.

In derivation 11, the nominal formed by the verb plus /-li/ seemed to replace the nominal formed by the verb plus /-len/ (Der. 13), even though the nominal /-li/ was not regularly employed. The derivation /-len/ was never used, but for the two sentences used to elicit this derivation the speakers often gave /-li/. The sentence, 'The meal was yesterday', was eliminated from the analysis because the derived term, /dumūni/ (11b), is well known as a vocabulary item. Almost all the speakers gave the form /dumūni/ and only one speaker gave /tagali/ in the preceding sentence (11a) 'leaving is painful'. Judging by these two sentences, /-li/ did not seem to be known. But when the two sentences where /-len/ was expected were considered, /-li/ did have a wider use, as it replaced /-len/. The analysis of variance for Derivation 11 was based on sentences 11a, 13a,b.

Derivation 15 is the instrumental, a verbal plus /-lan/. Again, for one of the sentences (15a) it is likely that the derivation was learned as a vocabulary item. All the correct answers for D-II and most of those for D-I used this word, /siginan/. Since there were not all that many correct answers, however, the case is not as clear as that of /dumūni/, and the item was retained in the analysis of variance calculations. In the lexicon, D-I speakers used the affix for three words; the D-II speakers did not use it at all.

Derivation 5, the augmentative /-ba/, was the best known to both groups. In most instances where the speaker did not use the affix /-ba/, he used the independent morpheme /gbəle/ 'big, fat', often with reduplication. In the lexicon, both groups used the affix also.

3.2.2. Derivations with a significant (5% or less) between-group variance.

In all of the following derivations, the D-II score was always very low. Derivations 1, 3, and 7 were used somewhat by the D-I speakers. Derivation 1 changed an intransitive verb to a transitive. While the actual derivational affix /la-/ was not used often, the other verbal marker in the transitive sentence, /ka/, was widely used by both groups. Sentence (1a) was the intransitive:

(1a) /musa wuli la/ 'Moussa got up'

Its transitive pair should have been:

(1b) /musa ka tabali la wuli/ 'Moussa lifted the table'

but was often given as:

/musa ka tabali wuli/

The marker /ka/ was given by Dumestre [1970] as the marker for the 'accomplished' in transitive verbs, active voice. The suffix /-la/ was given as the marker for the accomplished for transitive verbs in passive voice and for intransitive verbs. These markers, with the addition of an object in the transitive sentences, sufficed for all the D-II speakers and for more than half the D-I speakers to distinguish the transitive from the intransitive, without the prefix /la-/.

Derivation 3 was an adjective plus /-ya/ meaning 'to become X'. Most of the incorrect answers could be translated by 'he is X', instead of 'he has become X'. The word /sisan/ 'now, immediately', was used several times by D-I and D-II speakers, almost always without /-ya/, giving the impression that this word expressed the idea of 'become' for some speakers.

Derivation 7, nominal plus /-ka/ 'inhabitant of', had many alternate answers not using the derivational affix. 36% of the D-I respondents used the verb /bo/ 'to come', as in 'he comes from...'. 15% of the D-II answers used /bo/ and another 23% of the D-II answers were with /sigi/ 'sit', which was not used by D-I at all.

Derivation 9 and 14 received moderate use by the D-I's. Derivation 3, the derivation of a verbal 'to become' from an adjectival, has already been discussed. This derivation can also be used as a nominal (derivation 9). With the adjectival /jugu/ 'wicked' one can form the following sentences:

- (9) a. /a ka jugu/ 'he is wicked'
 b. /a jugu-ya-ra/ 'he has become wicked'
 c. /jugu-ya lo/ 'it's wickedness'

It is the last sentence which is of interest now. D-I speakers used

/jugu-ya/ as a nominal in 59% of the cases, while those of D-II used it in 8% of the cases (one case). Most of the D-II groups simply said they didn't know how to say sentence (9c).

The agentive, Derivation 14, is formed from a verbal (which can be a nominal plus /ka/ 'do') plus /-la/. 50% of the D-I answers were correct, as against only 4% of the D-II answers. The speakers, more in D-II than in D-I, used the word /mogo/ 'person' instead of the derivational affix. Two D-I speakers used /mogo/, while six D-II speakers did so. In addition, two other D-II speakers used other 'person' lexemes, /ce, den/, in place of the derivation. The words for 'butcher' and 'vendor' in the lexicon showed similar results to the sentences. In the agentive, then, we again see the replacement of a derivational affix by independent lexical items.

The last derivation to be mentioned is Derivation 8, the derivation of an ordinal number from the cardinal. This was very well known by the D-I group, and almost not at all by the D-II group. Members of D-II used the cardinal form exclusively in most cases for both cardinal and ordinal. There were two instances of borrowing from French in D-II and one in D-I. This was the only derivation for which speakers borrowed from French.

4. Geographic Dialects in D-I

The distribution of the number of derivations known by a speaker was parallel to that of the lexicon. That is, the group from the center-north (Korhogo, Boundiali, Sikasso, Faraba) knew the most, with those from Odienné second. The following table gives the average number of derivations known by the speakers of each geographic group.

Table 2: Geographic Areas

Center-North	9.25
Odienné	7.30
Séguéla	6.50
Touba, Man	5.00

5. Primary Languages of D-II

The speakers of Akan and Krou languages had about the same average knowledge of the derivations, 1.75 and 2.0 derivations per speaker respectively. The Western Mande group know the derivations better, with

an average of 3.23 derivations per speaker. It would be helpful to know if some of the derivations tested are cognate with these speakers' first languages as Dioula is also a Mande (Eastern) language. The four Mande speakers did not all know the same derivations, but their three respective first languages could have retained different derivations from Proto-Mande. Considering the derivations which were known by the Mande speakers, two of these derivations were cognate in Dioula and Gouro (the only other Mande language in question for which a grammar was available).

<u>Gouro</u>		<u>Dioula</u>	
/ne/	'child, dim.'	/-nin/	'diminutive'
Verbal /-li/	'nominal'	Verbal /-li/	'nominal'

The instrumental in Gouro is /-fe/. In Dioula the word /fen/ means 'thing', and was sometimes used to express the instrumental instead of the inflection /-lan/. One other derivation used by the Western-Mande group was the agent /-la/, and for that the derivation in Gouro is /-za/.

6. Simplification in the Derivational System and Pidginization

The system of derivation, such as has been examined here on the level of every-day usage, was limited as measured against an ideal grammar for the primary speakers (D-I), and much more severely reduced for the secondary speakers (D-II). More important than this difference in quantity of derivations correctly used, as demonstrated by the analysis of variance of the speakers' scores, was the rather widespread tendency to replace the affix of the derivation with a lexeme. Both groups did this, but the practice was more common in the D-II group. Both groups frequently used a lexeme for the diminutive. For the augmentative and the agentive D-II speakers used lexemes considerably more than those of D-I. Another derivation, /sun/, to indicate the tree or plant bearing a particular fruit, was elicited in the vocabulary section. D-II speakers substituted the lexeme /yiri/ 'tree, plant' exclusively, while D-I speakers preferred /-sun/, the derivational affix. D-II speakers also used the lexeme for 'thing', /fen/, instead of the instrumental derivation. The replacement of the affix by a separate lexeme constitutes a true simplification

in the language, for no information has been lost to complicate or confuse communication. The two terms (lexeme and derivational affix) in each case have the same meaning, but now there is one term where there were two. The lexeme alone has the roles of a functional morpheme and of a word.

This development in the derivational system is paralleled by certain developments in pidgin languages and by the child learning his mother-tongue. To quote Traugott [1972]:

If a language is used in rather limited ways, in other words, has attached to it a narrow set of appropriateness conditions, we should expect a rather limited set of derivations (given a generative semantic point of view). We would therefore predict a relatively small number of surface possibilities, and that is of course exactly what we find. Compared to non-pidgin languages, pidgins certainly have highly simplified surface structures....(p. 44)

And in referring to language acquisition:

It seems to me that a natural syntactic process gives distinct surface expression to grammatical categories such as tense, aspect, mood, conjunction, negation, quantification, and so forth. Ideally they will be expressed analytically, that is periphrastically, though under the influence of the input, they may be expressed agglutinatively or even inflectionally. In the earliest stages of acquisition, however, they are nearly always periphrastic....(p. 16)

In the present research on Dioula a reduced number of derivations was found, as predicted above. There was also a tendency to express the idea of the derivation by an analytic expression, a free lexeme, instead of by an inflection. These tendencies were found in both groups, but they were more marked in the second language speakers.

In speaking of West African Pidgin English, Agheyisi [1971:54-55] also remarked that tense, number, aspect, etc. are expressed by lexemes instead of by inflection. She noted the lack of derivations and also the polyvalence of certain forms. This polyvalence was evident in D-II speakers, who used one form (the cardinal) for both the cardinal and

ordinal numbers. Almost all the D-I speakers made the distinction between the two sets.

Traugott [1972:33] also pointed out the use of adverbs to replace the tense markers in pidgins. A similar substitution for a derivation was found in the Dioula speakers for Derivation 3 (adjectival plus /-ya/ meaning 'become'). Several speakers, this time more in D-I than in D-II, used the adverb /sisan/, 'now, immediately' instead of the affix, to translate a sentence such as 'my father has become old'. One D-I speaker and one D-II speaker used both the adverb and the affix.

In the case of Dioula, then, one finds parallels to tendencies characteristic of pidgin languages, and to the acquisition of a first language by the child. The reduction of surface markers such as inflection, has also been noted in simplified registers (i.e. baby talk, foreigner talk) by Ferguson [1971]. The fact that these tendencies were found principally in the Dioula-as-second-language group (D-II) suggests that these tendencies may characterize language learning in general, whether first, second or pidgin (I am excluding here the acquisition of a foreign language in a classroom). The presence of these tendencies in telegraphic style, foreigner talk, etc. shows them to be part of the adult language potential as well. What evidence there was of these tendencies in the D-I group may be explained by the age of the speakers. As they were young adolescents, it is quite possible (though I do not have empirical evidence) that they had not completely learned their first language (Dioula) and that derivations are acquired late. These cases may then be considered under the category of a child's acquisition of his first language.

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APPENDIX: The Derivations

The derivations were taken from Dumestre, Éléments de Grammaire Dioula, pp. 47-57. The English sentences are translations of the French sentences used to elicit the derivations.

1. Transitive verb derived from an intransitive verb:

(a) /musa wu <u>l</u> la/	'Moussa got up'
(b) /musa ka tabali <u>l</u> a-wuli/	'Moussa lifted the table'
(c) /musa bo <u>l</u> a/	'Moussa went out'
(d) /musa ka a <u>l</u> a-bo/	'Moussa made him go out'
2. Verbal reduplication:

(a) /a ka sogo tige- <u>t</u> ige/	'He cut the meat into little pieces'
(b) /a ka a sen ko- <u>k</u> o/	'He washed his foot over and over'
3. Adjectival plus /-ya/, 'become':

(a) /wulu jugu- <u>y</u> a-ra/	'The dog has become mean'
(b) /mɔgɔ ca- <u>y</u> a-ra/	'The people have become numerous'
(c) /n face kɔɔ- <u>y</u> a-ra/	'My father has become old'
4. Nominal from an adjectival plus /-man/:

(a) /a gba-na/	'It's hot'
(b) /gba- <u>m</u> an-lo/	'It's the heat'
5. Augmentative:

(a) /bon- <u>b</u> a be yan/	'There is a big house over there'
(b) /a ka muru- <u>b</u> a san/	'He bought a big knife'

6. Diminutive:

- (a) /kono-nin do be sanɛ/ 'There's a little bird up there'
 (b) /a ka wulu-nin san/ 'He bought a puppy'

7. Region, origin:

- (a) /ce nin ye bwake-ka ye/ 'This man is from Bouake'

8. Ordinal numbers:

- (a) /saba-nan/ 'third'

9. Nominal from a verbal (adj. -ya) plus Ø:

- (a) /a ka jugu/ 'He is mean'
 (b) /a jugu-ya-ra/ 'He has become mean'
 (c) /jugu-ya lo/ 'It's meanness'
 (d) /a ka kɛnɛ/ 'He's in good health'
 (e) /a kɛnɛ-ya-ra/ 'He's gotten well'
 (f) /kɛnɛ-ya lo/ 'It's health'

10. Nominal form an integrated verbal plus /-man/:

- (a) /a ka fin/ 'It's black'
 (b) /fin-man lo/ 'It's blackness'
 (c) /a ka dɪ/ 'It is sweet'
 (d) /dɪ-man lo/ 'It's sweetness'

11. Nominal from a verbal plus /-li/:

- (a) /taga-li ye fen gbelenan ye/ 'Leaving is painful'
 (b) /dumun-ni-kɛra kunu/ 'The meal was yesterday'

12. Verbal plus /-ball/:

- (a) /dugu nin mogoye malo-ball ye/ 'The people of this village are shameless'
 (b) /sun don-ball/ 'He who doesn't fast'

13. Nominal from a verbal plus /-len/:

- (a) /sogo tige-len lo/ 'It's cut meat'
 (b) /mɔ-nin-men lo/ 'It's something cooked'

14. Agent:

- (a) /n face ye stnc-ke-la ye/ 'My father is a farmer'
(b) /baara-ke-law be yan/ 'The workers are here'

15. Instrument:

- (a) /a sigilen be sigi-lan kan/ 'He is seated on the seat'
(b) /kulisiija-lan/ 'belt'