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ABSTRACT

This study replicated and validated the Dolch basic sight vocabulary investigation. Dolch's method of compiling his list of 95 nouns was also replicated. Some discrepancies were found between the replication study and Dolch's investigations--a few words were left off the lists, although they apparently met all the criteria for inclusion, and a lack of consistency was noted in Dolch's choices for including words on his lists. It was concluded that pseudo-empirical is a correct description of Dolch's method in compiling his basic sight vocabulary. It was also determined that this list is still viable since it accounts for over 50 percent of the words currently used in reading materials for both children and adults. (Author)

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The Dolch Basic Sight Vocabulary Investigation:

A Replication and Validation

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Abstract

Replicates and validates the Dolch basic sight vocabulary investigation. Dolch's method of compiling his list of 95 nouns was also replicated. Some discrepancies were found between the replication study and Dolch's investigations: a few words were left off the lists although they apparently met all the criteria for inclusion, and a lack of consistency was noted in Dolch's choices for including words on his lists. It was concluded that "pseudo-empirical" is a correct description for Dolch's method in compiling his basic sight vocabulary. It was also determined that this list is still viable since it accounts for over 50 per cent of the words currently used in reading materials for both children and adults.

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The Dolch Basic Sight Vocabulary Investigation:

A Replication and Validation

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Approximately four decades ago, Edward W. Dolch (1936, 1941, 1948) developed a basic sight word list. Such a list was needed because teachers from grade two on found pupils who had very small or practically non-existent sight vocabularies (Dolch, 1948). Since there was no single short list which Dolch believed could help these pupils, he undertook an investigation to develop such an aid. From his investigation came a list of 220 words (see Appendix) which has received widespread publication and use. Even today, there is little doubt that his list of basic sight words is known and widely used by teachers. Of the more than 125 word lists which have been constructed during this century (Johnson and Barrett, 1972), there is little doubt that the Dolch list has been

the dominant one used by classroom teachers (Harris and Jacobson, 1973-1974). Widespread use of the Dolch list has been fostered by several factors. Authors of textbooks on the teaching of reading (Bammon, Dawson, and McGovern, 1973; Guszak, 1972; Harris, 1970; Kottmeyer, 1959; Zintz, 1970) have referred to the Dolch list and offered suggestions for its use. Also, many books, games, and supplementary materials have been developed to help teach these words in isolation and in context.¹

Although most teachers are probably content to continue using the Dolch list, the 1970's have witnessed considerable criticism of this list and an unheralded profusion of new word lists (Harris and Jacobson, 1973; Hillerich, 1974; Johns, 1972; Johns, 1974; Johnson, 1971; Otto and Chester, 1972). Criticisms of the Dolch list appear to focus on the age of the list and the basis upon

1. See, for example, the catalogs entitled Dolch supplementary teaching aids and Dolch books published by Garrard, Champaign, Illinois.

which it was compiled.

Since the Dolch list was published in the 1930's and compiled from studies done in the 1920's, it is argued that the vast number of cultural changes which have taken place since that time make the Dolch list passé. A recent investigation (Johnson, 1971b), moreover, indicated that nearly one-third of the Dolch words are not among the 220 most frequently occurring words in adult materials. Johnson, Smith, and Jensen (1972) have argued that the need to keep a word list up-to-date seems readily apparent.

The method Dolch used to compile his list has been characterized as "pseudo-empirical" (Otto and Chester, 1972): selecting 193 words which were common to three lists and then adding twenty-seven words which were on at least two of the lists because they "obviously" belonged with the other 193 words.

Purpose of study

It was the purpose of this study to replicate the original Dolch investigation and to compare the Dolch list with two

recently published word count studies. Although the Dolch list has been characterized as "pseudo-empirical," no one has replicated Dolch's study and explored this charge. Also, since the Dolch list has been labeled as passé, it should be desirable to determine whether this list still accounts for a large percentage of the words in the materials read by both children and adults.

The replication of the original Dolch investigation

To replicate the original Dolch study, the investigators obtained the three word lists which, according to Dolch (1941), contained the most essential words needed by pupils in their reading.

The first list contained the first 500 words (actually, 453 different words) of the Gates (1926) list which has been used as a basis for many studies in reading vocabulary. This list is generally recognized as containing words of first importance for children's reading. Gates developed his list from several sources. He began with Thorndike's (1921) 2,500 words of highest

frequency. Next, Gates added those words not in the 2,500 from Thorndike's list which were among the thousand words of highest frequency found by Moore (unpublished) in her count of words in a selection of young children's literature. Gates then included additional words from the most frequent words in a series of first-grade readers (Packer, 1921). Finally, Gates consulted Horn's study (1925) and chose additional words from the thousand most frequent words in the spoken vocabularies of young children up to and including six years of age.

The second list was that compiled by Wheeler and Howell (1930). It consisted of the 453 words most frequently found in ten primers and ten first readers published between 1922 and 1929. The list was compiled by combining the vocabularies of the ten primers with the vocabulary of the ten first readers resulting in 2,219 different words. The frequency of each word was determined by the total frequency as well as the number of books in which it occurred. From the resulting list, 453 words were selected. This

list represented the actual reading vocabulary used in grade one and presumably the vocabulary upon which all later reading was built.

The third list Dolch used was published by the Child Study Committee of the International Kindergarten Union (1928). This list was a summary of many studies which contained words children knew and used before entering first grade. The list was compiled from three sources: words children used in kindergarten, words children used at home, and words children used when stimulated by pictures. Only the 2,596 most frequently known words were chosen for the list, although some 7,000 different words were found. Many of these 2,596 words were not, according to Dolch, common words. Since the most important words were wanted, Dolch chose only those with a frequency of one hundred or more when combining regularly inflected forms. This process of selection resulted in a list of 510 words that were spoken often in kindergarten. This list contained about the same number of words as the above two

lists which Dolch used.

Dolch, then, used each of the three lists to compile his basic list of sight words which should be recognized instantly by children. The basic list was arranged according to parts of speech. If Dolch had rigidly adhered to the criterion of appearance of each word on all three lists, twenty-seven of the words would have been cut from the list. According to Dolch, this elimination would have been unfortunate since these twenty-seven words appeared in the refinement of the International Kindergarten Union list and in the first 500 of the Gates list. Dolch felt that these words "obviously" belonged with the other 193 words.

In this replication study, the first two word lists presented no problems since Dolch used both lists as published. The International Kindergarten Union list, however, contained 2,596 words but Dolch chose only those with a frequency of one hundred or more (regularly inflected forms being combined). In attempting to identify those 510 words, the present investigators encountered a

problem in determining what Dolch meant by "regularly inflected" forms. As Harris and Jacobson (1972) note, nearly all compilers of word lists have combined certain inflected forms with root words; however, no two list makers followed exactly the same set of rules. A careful analysis of the International Kindergarten Union list resulted in a list of approximately 559 words which apparently met the original Dolch criterion of a frequency of a hundred or more when inflected forms were combined.

These three word lists were then compared according to the procedures utilized by Dolch. The results of this comparison revealed findings that, for the most part, confirmed Dolch's results. However, some of the findings of the replication study were at variance with the original Dolch investigation.

I'll and oh were not included in the Dolch list even though these words appeared on all three lists. Dolch may have considered I'll an inflected form and decided not to include oh since it was an interjection. Regardless of his rationale, it was

clear from the current investigation that the two words were on all three lists and fully met the printed criteria established by Dolch (1941).

The word laugh was identified by Dolch as appearing on all three word lists; however, the replication investigation revealed that laugh only appeared on the Wheeler-Howell and Gates lists. To be consistent, Dolch should have noted this by an asterisk in his list (Dolch, 1936).

Finally, Dolch included try on his list of basic sight words even though it only appeared on the International Kindergarten Union and Gates lists. Since the word tried did appear on the Wheeler-Howell list, Dolch apparently considered tried as a regularly inflected form of try.

It is also worth noting that Dolch added only twenty-seven words which appeared on his refinement of the International Kindergarten Union list and the first 500 of the Gates list. There were, however, many additional words which he might have

included since they appeared on both lists. Why he did not consider words common to the International Kindergarten Union and Wheeler-Howell lists, or the Gates and Wheeler-Howell lists, is merely open to speculation. If, as Dolch (1948) indicated, start belongs with stop, is it possible that last belongs with first, and gone with go and goes? This may be the case; however, apparently Dolch thought otherwise when preparing his list. These two examples could be supported by other words which Dolch chose to omit from his final list of sight words: nothing belongs with all, near with far, stand with sit, and cry with laugh. Perhaps this elimination has been unfortunate in light of recent word lists (Harris and Jacobson, 1973; Johns, 1974; Johnson, 1971a; Otto and Chester, 1972) which have included a number of such words.

In any case, this replication of the original Dolch investigation has offered some evidence that the method Dolch used in compiling his list has been correctly labeled "pseudo-empirical": his method of study was not easily replicated, he did not clearly

define what he meant by regularly inflected forms, and his study contained some errors.

In addition to the list of 220 basic sight words, Dolch also presented a list of 95 nouns (see Appendix) which were common to the three word lists previously described. Replicating the method that Dolch used to compile his list of 95 nouns revealed that story was not on the list of nouns even though it appeared on all three word lists. Also, Santa Claus was included on the Dolch list of nouns even though it only appeared on the Gates and the International Kindergarten Union lists (Santa, however, was on the Wheeler-Howell word list). Dolch chose to include goodbye on his list of nouns even though it was spelled good-by on the International Kindergarten Union and Gates lists. Finally, Dolch evidenced some inconsistency as he chose words listed by Gates as both nouns and verbs. Some of these words were placed on his noun list (e.g., milk, rain, snow, water), and others on his basic list of 220 words (e.g., fix, can, play, drink, wish, work).

The check for currency

After Dolch compiled his list of 220 basic sight words, he determined the percentage of these words in various textbooks: reading, arithmetic, history, and geography (Dolch, 1948). He used a thousand-word sampling of each book and then calculated the percentage of his words which appeared in the books. It was found that the 220 words made up more than half of the reading matter in all of the books and over two-thirds of the words in grades one and two.

Recently Johns (1971) conducted a similar study to check the vocabularies of five popular basic reading series against the Dolch list. In the pre-primers and primers, all pages in each book were checked for Dolch words. Each time a Dolch word appeared in a book, it was marked on a prepared sheet which contained an alphabetical list of all 220 Dolch words. To determine the percentage of Dolch words in the pre-primers and primers, the total frequency of Dolch words was divided by the total number of words

in the books.

To determine the percentage of Dolch words found in the first through sixth readers, a slightly different procedure was used.

In each book a selection of 300 words was chosen at random from each third of the book. When a Dolch word appeared in the selections for that particular book, it was marked on a prepared sheet which contained an alphabetical list of all 220 Dolch words.

To determine the percentage of Dolch words for each book level, the total frequency of Dolch words for that particular sample was divided by the total number of words (in each case 900) for that particular level.

Using the procedure described above, the percentage of Dolch words in each book was calculated. Table 1 contains the various percentages of Dolch words for each reader level from the Johns and Dolch investigations.

Insert Table 1 about here

The table shows a remarkably high percentage of Dolch words for books in grade one and, as might be expected, a gradual decrease through the remaining grades. For all reader levels, however, the Dolch list made up more than half of the reading matter.

The consistently lower percentages in the Johns investigation compared to Dolch's original findings were probably due to the fact that Dolch included inflected forms of the basic sight words whereas Johns did not.

A related study reported by Zintz (1972) checked the vocabularies of five primary readers (pre-primer through the third grade) against the Dolch list. It was reported that over 200 of the 220 words contained on the Dolch list had been presented in each of the basic reading series by the end of the third-grade reader. Although no date is given for this study, it is probably twenty years old because of the particular basic reading series used.

Guszak (1972) also investigated the percentage of Dolch words

in basal readers from the second through the sixth grade. Although he did not indicate the procedure or the number of basal series used, the results of his investigation complement the results given in Table 1. At the second-grade level, 68 per cent of the words were Dolch words; for third-grade basals, 60 per cent were Dolch words; for fourth-grade basals, 56 per cent; for fifth-grade basals, 54 per cent; and for sixth-grade basals, 52 per cent were Dolch words.

In summary, then, recent checks in basal readers on the currency of the Dolch list have corroborated its usefulness. Within the past decade, two large word count studies have been published using materials intended for both children and adults. These two word lists provided a basis for investigating on a larger scale whether the Dolch list is passé.

The first source utilized was the American Heritage Intermediate (AHI) Corpus published in the Word Frequency Book (Carroll, Davis, and Richman, 1971). The AHI Corpus was compiled

from samples of published materials to which U. S. students are exposed in grades three through nine. The materials included textbooks, workbooks, kits, novels, poetry, general nonfiction, encyclopedias, and magazines. The AHI Corpus contains 5,088,721 words drawn in 500-word samples from 1,045 texts. There are 86,741 different words in the Corpus.

The second source was the Kucera-Francis (1967) Corpus. The Corpus was compiled from a wide body of "natural-language" adult published materials ranging from all kinds of newspaper writing to learned journal articles. It contains 1,014,232 words drawn in 500 samples of approximately 2,000 words each. There are 50,406 different words in the Corpus.

In conducting the check for currency, the investigators combined regularly inflected forms. For this investigation the term "regularly inflected" included these endings: e, es, ed, er (as comparative, not agent), est, ing, 's (indicating possession or plurality, not contraction), s's, and the dialectal 'in. In

general, if the form of the root word was kept intact, the inflected form was included. Examples here would be her-hers, it-its, little-littlest; dialect forms such as know-knowed; and misuses such as best-best's and i for I. Changes in meaning were not included, such as short-shorts, may-May or new-news. Also, two inflected endings (wash-washings) were omitted as well as spelling changes which obliterated the root word (funny-funnier, ride-riding, sit-sitting). And, finally, archaic forms (the verb endings est, eth), alternate spellings (bye for by), and misspellings were ruled out.

In this check for currency, then, the cumulative frequency of each of the 220 Dolch words in the AHI Corpus and the Kucera-Francis Corpus made it possible to determine the approximate percentage of Dolch words in materials that are read by children as well as adults. As Table 2 shows, the investigators found that

Insert Table 2 about here

approximately 55.1 per cent of the words in the American Heritage Corpus were accounted for by Dolch words. In the Kucera-Francis Corpus, approximately 51.2 per cent of the words were accounted for by Dolch words. Therefore, since all recent checks of Dolch's basic sight vocabulary have found that it still accounts for over 50 per cent of words used by children and adults, it clearly cannot be labeled passé.

Summary and conclusions

The present investigation had two purposes. First, the investigators replicated the original Dolch study. Second, the investigators determined the percentage of Dolch words which are contained in materials read by both children and adults. It was concluded that the original Dolch study did contain some errors and that the basis Dolch used for compiling his list could be characterized as "pseudo-empirical." Also, even though errors exist in Dolch's list of 220 words, it still accounts for over 55 per cent of the words used in materials written for children

in grades three through nine. Furthermore, the Dolch list accounts for over 50 per cent of the words frequently used in so-called "adult" materials. In retrospect, the investigators were surprised to learn that Dolch had errors in his research; however, the 220 words continue to account for over 50 per cent of all types of reading materials. Future research might be directed toward a comparison of other recent word lists to see if they account for significantly larger percentages of words.

A final point needs to be mentioned. In both the replication study and the check for currency, every effort was made by the investigators to be accurate. Lists were checked and rechecked and checked again. There can be, however, no assurance of absolute precision.

Table 1 A comparison of the percentage of Dolch basic sight words in basic reading series

Investigator	Reading Series	Reader Levels					
		1	2	3	4	5	6
Johns (1971)	5	66	61	52	55	55	55
Dolch (1941)	4	70	66	65	61	59	59

Table 2 Number and per cent of Dolch basic sight words in recently published word lists

Word List	Total Words in List	Approximate Number of Dolch Words	Per cent of Dolch Words
American Heritage Intermediate Corpus	5,088,721	2,803,520	55.1
Kucera-Francis Corpus	1,014,232	518,871	51.2

Appendix

The Dolch basic sight vocabulary of 220 words (Dolch, 1948) common to the Gates list, the Wheeler-Howell list, and the International Kindergarten Union list.

a	* done	I	out	these
about	don't	if	over	they
after	down	in	* own	think
again	draw	into	* pick	this
all	drink	is	play	* those
* always	eat	it	please	three
am	* eight	* its	pretty	to
an	every	jump	pull	today
and	fall	just	put	* together
any	far	keep	ran	too
are	fast	kind	read	* try
around	find	know	red	two
as	first	laugh	ride	under
ask	* five	let	right	up
at	fly	* light	round	* upon
ate	for	like	run	us
away	found	little	said	* use
be	four	live	saw	very
because	from	long	say	walk
been	full	look	see	want
* before	funny	made	* seven	warm
> best	gave	make	shall	was
> better	get	many	she	* wash
big	give	may	show	we
black	go	me	sing	* well
blue	* goes	much	sit	went
both	going	must	* six	were
bring	good	my	sleep	what
brown	got	* myself	small	when
but	green	never	so	where
buy	grow	new	some	* which
by	had	no	soon	white
came	has	not	* start	who
can	have	now	stop	why
carry	he	of	take	will
> clean	help	off	tell	wish
cold	her	old	ten	with
come	here	on	thank	work
could	him	once	that	would
cut	his	one	the	* writes
did	hold	only	their	yellow
do	hot	open	them	yes
does	how	or	then	you
	* hurt	our	there	your

*The 27 words marked with asterisks were included in only two of the lists.

Appendix (continued)

The Dolch list of 95 common nouns (Dolch, 1936)

apple	children	flower	money	sister
baby	Christmas	game	morning	snow
back	coat	garden	mother	song
ball	corn	girl	name	squirrel
bear	cow	goodbye	nest	stick
bed	day	grass	night	street
bell	dog	ground	paper	sun
bird	doll	hand	party	table
birthday	door	head	picture	thing
boat	duck	hill	pig	time
box	egg	home	rabbit	top
boy	eye	horse	rain	toy
bread	farm	house	ring	tree
brother	farmer	kitty	robin	watch
cake	father	leg	Santa Claus	water
car	feet	letter	school	way
cat	fire	man	seed	wind
chair	fish	men	sheep	window
chicken	floor	milk	shoe	wood

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