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Winifred Haralson

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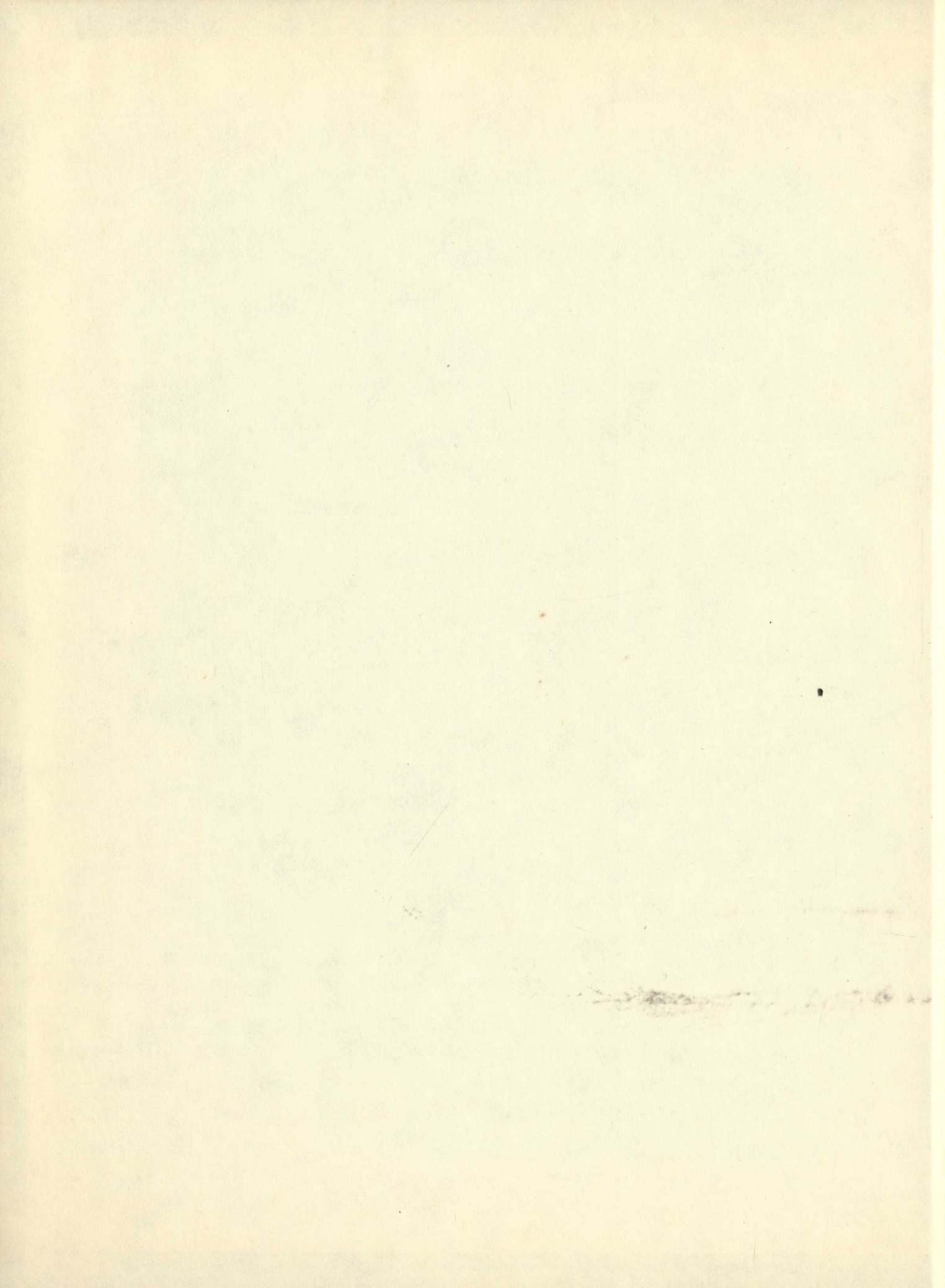


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WINIFRED HARALSON

AN EXPERIMENTAL INVESTIGATION
OF THE RELATION BETWEEN
READING RATE AND COMPREHENSION
AT THE FIFTH GRADE LEVEL

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AN EXPERIMENTAL INVESTIGATION
OF THE RELATION BETWEEN READING RATE AND COMPREHENSION
AT THE FIFTH GRADE LEVEL

4/24/53 By

Winifred Haralson

Thesis committee

A Thesis

Presented in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts in Education

University of New Mexico

1952

Presented in partial fulfillment of the
Requirements for the Degree of
Master of Arts in Education

378.789
Un30ha
1953
Cop. 3

This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of the University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

E. H. Castetter
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DATE

Thesis committee

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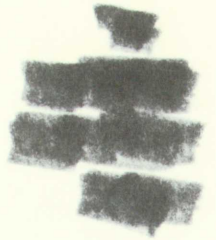
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The writer wishes to acknowledge her appreciation to Dr. L. S. Tireman who encouraged interest in the study, and to Dr. Kathleen McCann who, in Dr. Tireman's absence, gave encouragement and helpful guidance.

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The writer wishes to acknowledge her appreciation to
Mr. J. A. Thomas who assisted her in the study, and
to Mr. Thomas who, in the writer's absence, gave
her assistance and helpful criticism.



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are relatively low. Skimming is the type that most of us can do. Yet in a democratic country such as ours, people need to be well informed. A person who reads extensively will be a better informed person, and will be able to exercise the responsibilities of citizenship more effectively.

Not only is reading important as a tool of information for citizens, but it is vital in the wise use of leisure time and for the living of a more interesting life. Skill in reading and effective reading is a prerequisite for the full participation of citizens in this country. Will we not then work hard to develop

Statements of the purposes and objectives of this investigation are (1) to determine the relationship between the speed of reading and the amount of material read, (2) to determine the effect of type of material on the speed of reading, and the variability of reading speed among individuals.

Following are the questions which were asked in this study:

CHAPTER I

I. THE PROBLEM AND ITS DELIMITATIONS

In the modern world where so many demands are made upon one's time, opportunities to do careful, thoughtful reading are relatively few. Skimming is the type that most of us can do. Yet in a democratic country such as ours, people need to be well informed. A person who reads extensively will be a better informed person, and will be able to practice the responsibilities of citizenship more effectively.

Not only is reading important as a tool of information for citizens, but it is vital in the wise use of leisure time and for the living of a more interesting life. Skill in rapid and effective reading is advantageous to every one. As time goes on this advantage will become more and more desirable.

Statement of the problem. The purposes of this investigation are (1) to compare the relationship between the speed of reading and the amount comprehended, (2) to determine the effect of type of materials and purpose from reading on the variability of rate of reading and the amount comprehended.

Delimitation of the problem. The scope of this study is limited to six classes of regularly enrolled fifth grade pupils in the Artesia, New Mexico, public school during the school year 1948-49. Individual differences in mental

1. The purpose of this study is to determine the effect of reading on the development of the child's personality.

One's idea of personality is a complex, abstract concept. It is relatively low, depending on the type of work at hand. It is a factor in a child's development, and it is a factor in a child's personality. A person's personality is a factor in a child's development, and it is a factor in a child's personality. A person's personality is a factor in a child's development, and it is a factor in a child's personality.

Not only is reading important as a factor in a child's development, but it is also a factor in a child's personality. For example, a child who reads a lot is more likely to be a good student. A child who reads a lot is more likely to be a good student. A child who reads a lot is more likely to be a good student. A child who reads a lot is more likely to be a good student.

Statement of the problem. The purpose of this investigation is to determine the relationship between the amount of reading and the amount of personality development. The purpose of this investigation is to determine the relationship between the amount of reading and the amount of personality development. The purpose of this investigation is to determine the relationship between the amount of reading and the amount of personality development.

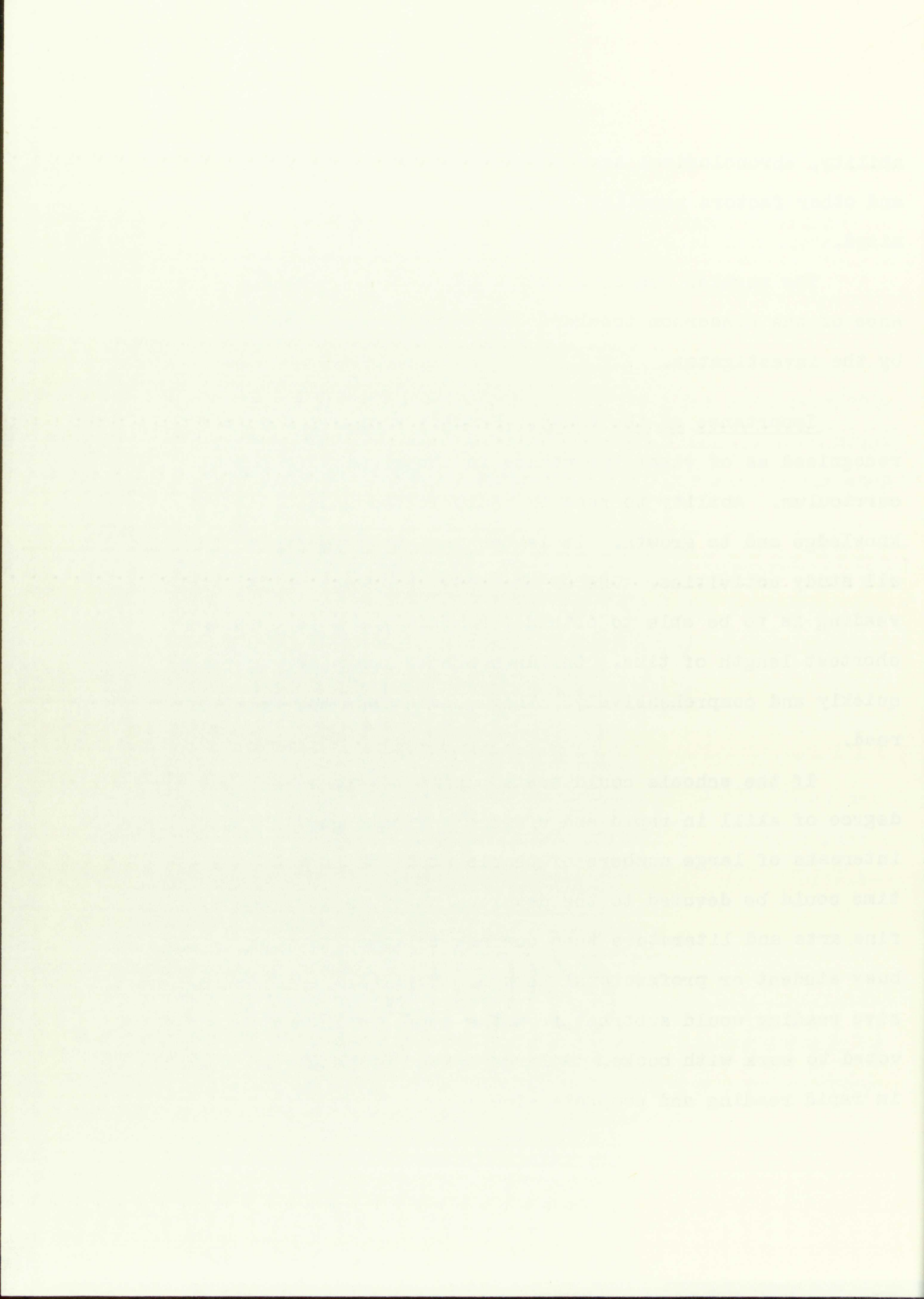
Delimitation of the problem. The scope of this study is limited to the amount of reading and the amount of personality development. The scope of this study is limited to the amount of reading and the amount of personality development. The scope of this study is limited to the amount of reading and the amount of personality development.

ability, chronological age, physical maturity, home background, and other factors peculiar to growing children are not recognized. It seems important that research be conducted to develop and develop tests for their measurement.

The regular school work was carried on under the guidance of the classroom teacher. The experiments were preformed by the investigator. It has been extensively studied with

widely varying results. The degree of correlation between Importance of the study. Reading always has been recognized as of vital importance in the elementary school curriculum. Ability to read is basic to the acquisition of knowledge and to growth. It is the tool that functions in all study activities. One of the most important skills in reading is to be able to obtain the most from a page in the shortest length of time. Children should learn how to read quickly and comprehensively. They should know how well they read.

If the schools could train pupils to attain a high degree of skill in rapid and efficient single reading, the interests of large numbers of people would be served. More time could be devoted to the development of tastes in the fine arts and literature than can now be given to them by the busy student or professional person. Skill in rapid extensive reading would subtract from the hours which must be devoted to work with books. A large number of people need skill in rapid reading and comprehension.



In the words of Hall,¹

If education is effectively to teach functional reading skills, it seems important that research discover their nature and develop tests for their measurement.

To know how pupils read most effectively at a rapid rate would be of great help. The relationship between reading rate and comprehension has been extensively studied with widely varying results.² The degree of correlation between rapid reading for a specific purpose and rapid reading for general information never has been definitely determined.

II. DEFINITION OF TERM USED

Rate of reading. Rate of reading shall mean that rate at which one reads with understanding.

III. SOURCES OF DATA

A set of four tests were set up to determine the relative value of the factors involving the use of questions to direct reading. Materials for these tests were of two types --fictional and factual. Selections for the tests in fiction

¹William Hall and Francis Robinson, "An Analytical Approach to the Study of Reading Skills," Journal of Educational Psychology, 36:429, October, 1945.

²Paul Blommer and E. F. Lindquist, "Rate of Comprehension of Reading: Its Measurement and Its Relation to Comprehension," The Journal of Educational Psychology, 35:449-472, November, 1944.

in the words of Hall, "It is often said that the reading process is a simple, automatic, and unlearned activity. It is, in fact, a complex process involving many factors, and it is one that can be improved through practice and instruction." The degree of correlation between rapid reading and rapid writing for a specific purpose and rapid reading for general information never has been definitely determined.

III. DEFINITION OF TERMS USED

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1. William Hall and Francis Robinson, "An Analytical Approach to the Study of Reading Habits," *Journal of Educational Psychology*, 38:122, October, 1945.
2. Fred Brown and E. F. Lindquist, "Rate of Comprehension of Good and Bad Material and the Relation to Comprehension," *The Journal of Educational Psychology*, 38:122, October, 1945.

were taken from the fifth grade reader Days and Deeds.³ The factual material was from My Weekly Reader, No. 5.⁴ The first test was given on the third Wednesday of October, 1948, to 217 pupils enrolled in the fifth grade in the Artesia, New Mexico, public schools. Tests were again administered to pupils still enrolled in the six classrooms on the third Wednesday of December, February, and April. Each time tests were administered to only those children who had taken all previous tests. Coefficient of correlation between the two sets was .80.

IV. METHOD OF PROCEDURE

V. ORGANIZATION OF MATERIAL OF TESTS

This investigation was conducted in a normal public school situation wherein all variables common to any given school population might be present. All tests were administered by the investigator. As each test was given, special care was used to preserve the same plan of procedure for each group. The usual methods of instruction were practiced with all teachers following their customary routines.

In selecting the 200 cases used in this study only those pupils were included who (1) were regularly enrolled in the fifth grade of the Artesia, New Mexico, public schools

³William S. Gray, Marion Monroe, May Hill Arbuthnot, Days and Deeds (New York: Scott, Foresman and Company, 1943), 478 pp.

⁴News item in My Weekly Reader, 1948, 49.

...from the fifth grade of the Artesian High School, New Mexico, published in the Bulletin of the American Psychological Association, Vol. 1, No. 1, 1911. The material was from the ... of the ... and ...

IV. METHOD OF INVESTIGATION

This investigation was conducted in the following manner: ... school situation wherein all ... school population might be present ... by the investigator. As soon as ... case was used to preserve the ... each group. The usual method of ... with all teachers following their own ... In selecting the 200 cases used in this study ... those pupils were included who ... in the fifth grade of the Artesian High School.

William E. Gray, Kansas State Normal, Topeka, Kansas, 1911.
Gray and Deeds (New York: Holt, 1911).
... in the ...

at the time the tests were given, (2) were actually in school when the series of four tests were administered, and (3) had taken all preceding tests.

In order to determine the degree of relationship between rate of reading and degree of comprehension when reading for a specific purpose, and the rate of reading and degree of comprehension when reading for general information, the rate of reading and comprehension were determined for each test of like nature. The coefficient of correlation between the two sets was computed.

V. ORGANIZATION OF REMAINDER OF THESIS

The remainder of this thesis will be divided into four chapters. Chapter II gives a review of related literature. The third chapter gives the Method of Conducting the Study. Chapter IV is an Analysis of the Data. The final chapter summarizes the findings and presents conclusions drawn by the investigator.

Since that time many other investigations have been made. In a study of 2500 pupils, G. A. Wood found the record

and B. H. Wood, The Psychology of Reading, of London, (New York: The McGraw-Hill Book Co., 1924).

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CHAPTER II

REVIEW OF RELATED LITERATURE

There is an almost unlimited amount of literature concerning the rate of reading and comprehension. Some of it deals with one phase of the subject, some with another. Studies reviewed here are those which are related to the present study.

Late in the nineteenth century educators began to stress silent reading instead of oral reading. This immediately brought out the variability of rate and its influence on reading. In 1908 Huey¹ found that adults whom he tested on very easy material varied from 2.5 words per second for the slowest reader to an average of 9.8 words for the fastest reader, when reading silently at his normal rate.

In a second reading, they were asked to read as rapidly as possible. At that time their rates varied from 3.5 to 13.5 words per second.

Since that time many other investigations have been made. In a study of 2654 pupils Gray² found that the second

¹Edmund B. Huey, The Psychology and Pedagogy of Reading, (New York: The Macmillan Company, 1908), pp. 174-175.

²William S. Gray, Studies of Elementary School Reading Through Standardized Test, (Supplementary Educational Monographs, Chicago: University of Chicago Press, 1917), p. 113.

Reading as a Skill

Reading is a complex process involving the use of the eyes, the brain, and the language. It is a skill that is developed through practice and experience.

The purpose of this chapter is to discuss the various factors that influence reading performance and to provide some suggestions for improving reading skills.

One of the most important factors in reading is the quality of the text. If the text is poorly written or if it contains many errors, it will be difficult to read. Therefore, it is important to choose books and articles that are well-written and free of errors.

In a second reading, they were asked to read as rapidly as possible. At that time their rates varied from 8.5 to 12.5 words per second.

Since that time many other investigations have been made. In a study of 2354 pupils Gray² found that the second

¹ Edward B. Hunt, *The Psychology and Pedagogy of Reading*, (New York: The Macmillan Company, 1908), pp. 174-175.

² William B. Gray, *Studies of Elementary School Reading*, (Chicago: Rand McNally, 1917), pp. 1-12.

grade pupils varied from .35 words to 6 words per second, the fifth grade varied from .83 words to 8 words per second, and that the eighth grade pupils had a range of 1 to 8 words per second.

In a study of a psychology class, Abell³ found that the students differed widely in rate of reading. This experiment was performed on college students. They read a story before class, and later were asked to write out the story as nearly verbatim as possible.

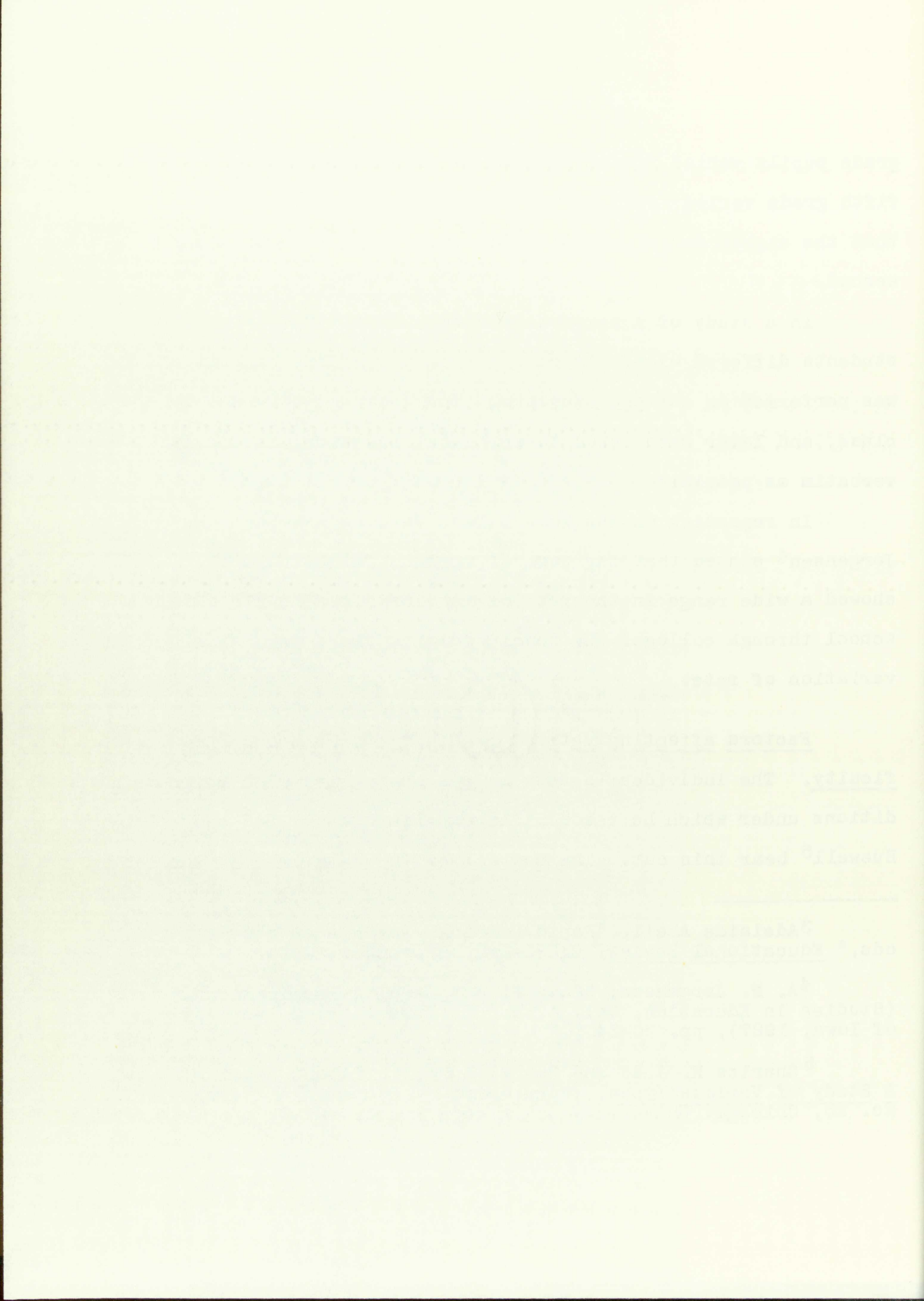
In reporting on the Iowa Silent Reading Examinations, Jorgensen⁴ stated that the work of various investigators showed a wide range in the rate of reading from the elementary school through college. He concluded that there is a wide variation of rate.

Factors affecting rate of reading: Purpose and Difficulty. The individual's rate in reading varies with the conditions under which he reads. The experiments by Judd and Buswell⁵ bear this out. The content of the material and the

³Adelaide Abell, "Rapid Reading: Advantages and Methods," Educational Review, 8:283-286, September, 1894.

⁴A. N. Jorgensen, "Iowa Silent Reading Examinations," (Studies in Education, Vol. 4, No. 3, Iowa City: University of Iowa, 1927), pp. 30-34.

⁵Charles H. Judd and Guy T. Buswell, Silent Reading: A Study of Various Types, (Supplementary Educational Monograph No. 23, Chicago: University of Chicago Press, 1922), pp. 7-46.



purpose for which one reads both affect his rate. When reading fiction one would read much faster than if he were reading factual material. Judd and Buswell⁶ also found that a person reads much faster when reading for pleasure than when reading to answer questions on the material read.

Whipple and Curtis⁷ found that their subjects read more slowly when they knew that they would have to answer questions on what they read.

Courtis,⁸ Gray,⁹ and others found that rate varies with the purpose for reading. Hulten¹⁰ concluded that, "A good reader in one type of reading is also likely to be a good reader in other types of reading, although his rate varies."¹¹

⁶Loc. cit.

⁷Guy M. Whipple and Josephine N. Curtis, "Preliminary Investigations of Skimming in Reading," Journal of Educational Psychology, 8:333-349, June, 1917.

⁸S. A. Courtis, "Standards in Rate of Reading," Fourteenth Yearbook of the National Society for the Study of Education, Part I, 1915, pp. 44-58.

⁹C. T. Gray, Types of Reading As Exhibited Through Tests and Laboratory Experiments, (Supplementary Educational Monographs, Vol. I, No. 5, Chicago: University of Chicago Press, 1917), pp. 17-64.

¹⁰C. E. Hulten, "A Study of the Speed of Upper Grade Reading," Journal of Educational Research, 10:148, September, 1924.

¹¹Loc. cit.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

Oberholtzer¹² found that rate decreases in proportion to the strictness with which the readers are held for the content. Many investigations reveal that easy material is read more rapidly than difficult material. Difference in rate also has been found to be more marked in immature readers than in mature ones. Anderson¹³ found that good readers adapt themselves much more readily to the material than do poor readers. The latter are apt to read all material at the same rate.

In a study of reading tests, Foran¹⁴ found that there is no fixed rate at which a person reads but rather that rates are adapted to specific needs. He states that good reading is characterized by flexibility and capacity to adapt to such needs.

In 1920 an experiment by Yoakum¹⁵ attempted to determine the probable effect of a single reading of various types.

¹²E. E. Oberholtzer, "Testing the Efficiency of Reading in the Grades," Elementary School Journal, 15:313-322, February, 1915.

¹³I. H. Anderson, Studies in the Eye-Movements of Good and Poor Readers, (Psychological Monographs, Vol. 48, Whole No. 215, 1937), pp. 1-35.

¹⁴Thomas G. Foran, "The Present Status of Silent Reading Tests, Part I: The Measurement of the Rate of Reading," Catholic University of American Education Research Bulletins, Vol. II, No. 2, Washington: Catholic Education Press, 1927, p. 28.

¹⁵Gerald Alan Yoakum, Reading and Study, New York: The Macmillan Company, 1933, p. 205.

of material. He used a series of experiments with grades 4, 5, and 6 in the University of Iowa Elementary School, and in a neighboring public school. Several types of highly factual materials were used. These were of different lengths and they varied in difficulty.

In a summary of the investigation, Gray¹⁶ concluded:

Any effort to establish a standard rate of reading for all pupils fails to take into account two significant facts, namely, that rate varies for the same individual according to the type and difficulty of the material, the purpose of the reading, and the conditions under which the reading is done.¹⁷

Relation Between Rate and Comprehension. Many educational psychologists think that there is high correlation between speed of reading and comprehension. This conclusion has been drawn from experiments where standard reading tests were used and the time limit was common to both speed and comprehension. Other studies assume that the rapid reader does not understand what he reads as well as does the slow reader.¹⁸ If this were true, however, to increase speed of reading would be detrimental to the rapid reader. Judd¹⁹

¹⁶William S. Gray, Summary of Investigations Relating to Reading, (Supplementary Educational Monographs, Chicago: University of Chicago Press, 1925), p. 124.

¹⁷Loc. cit.

¹⁸Ibid., pp. 122-139.

¹⁹Charles H. Judd, Measuring the Work of the Public Schools, Cleveland: Survey Committee of the Cleveland Foundation, 1916, pp. 124-126.

of material. We used a series

of tests in the University

of California public schools

to determine the effect of

reading in different

in a summary of the

of the efforts to establish

all public schools to have

reading material, that would

according to the type and

purpose of the reading.

The reading is done

between levels of reading and

has been shown from experience

were used and the time limits

comprehension. Other studies

does not understand what is

reading. If this were true,

reading would be detrimental

William S. Gray, Jr.

to Reading, Department of

University of Chicago Press

Chicago, Ill.

Chicago, Ill.

Chicago, Ill.

Chicago, Ill.

believed that his experiments emphasized the fact that "good readers are usually not slow, and poor readers are usually not fast readers."²⁰

Witty and Kopel²¹ found that many standardized tests of general reading ability have time limits which reward rapid readers and penalize careful reading. This not only handicaps the slow reader because he never finishes the selection, but, also, hinders a slow thinker in answering questions.

In 1916 King²² attempted to find out if students could answer questions more readily when reading above or below their normal rates. He divided the class of ninety-four university students into fast and slow groups by telling every other student to read rapidly or slowly but also carefully. After the students had read for ten minutes they were tested by means of a set of questions, the fast group having four more questions than the slow group. An analysis of the study shows that the fast group read more material and remembered slightly more than the slow group.

In a second experiment King²³ had each of the ninety-three students read at his normal rate. All read until

²⁰Loc. cit.

²¹Paul A. Witty and D. Kopel, Reading and the Educative Process, Boston: Ginn and Company, 1939, p. 80.

²²Irving King, "A Comparison of Slow and Rapid Readers," School and Society, 4:830-834, 1916.

²³Ibid., pp. 830-834.

several had completed the material. King found from this investigation that there was little difference in reading efficiency if the subjects read at their normal rates.

Later King²⁴ carried out two experiments in which he found that for specific facts the rapid readers were considerably less efficient than the slow readers. Since the results of King's experiments differ so widely from each other one can hardly accept the conclusions as final.

In his discussion of rapid readers, Jorgensen²⁵ stated that the rate depends to a large extent on the reader's ability to comprehend new situations and this in turn may be influenced by the range of experience.

In a study to determine the relation of speed of reading to comprehension, Eurich²⁶ obtained a correlation of $.47 \pm .06$ which showed the relation of Form A of the Minnesota Speed of Reading Tests and the Minnesota Reading Examination for college students. This gives a measure of comprehension.

²⁴Irving King, "A Comparison of the Efficiency of Slow and Rapid Readers," School and Society, 6:203-204, 1917.

²⁵A. N. Jorgensen, "Iowa Silent Reading Examinations," (Studies in Education, Vol. 4, No. 3, Iowa City: University of Iowa, 1927), pp. 30-34.

²⁶Alvin C. Eurich, "The Relation of Speed of Reading to Comprehension," School and Society, 32:404-406, September, 1930.

Another study was made by Greene²⁷ to determine the effectiveness of various rates of reading where other factors were constant. Results show that the amount of time is more important than rate of work. The results of both Greene's and King's studies seem to indicate that the student learned more per reading when reading slowly than when reading rapidly.

The purpose of a very important study made by Traxler²⁸ in 1932 was to find out if correlation was high between rate and comprehension when these aspects of reading ability are differentiated by the test. The study consisted of forms of a rate test, a reading ability, and a general comprehension ability.

Fiction material of about 1200 words each were given to eighty seventh grade pupils. The children read the entire selection. Rate of reading was measured as they read. Before the reading of each test, the investigator told the readers that they would be tested on the material read. Comprehension of each test was measured by ten multiple choice questions. The author's conclusions were:

It appears that when high school pupils read with the knowledge that they will be asked questions about

²⁷Edward B. Greene, "Effectiveness of Various Rates of Silent Reading of College Students," Journal of Applied Psychology, 15:214-227, April, 1931.

²⁸Arthur E. Traxler, "The Correlation Between Reading Rate and Comprehension," Journal of Educational Research, 26:97-101, October, 1932.

the material when they finished reading, the slow and rapid readers answer the questions about equally well. The rapid readers seem to do slightly better with the questions than the slow readers, but the amount of their advantage is negligible.

Tinker²⁹ has been much interested in reading rate and comprehension. In 1932 he published material discussing the method of computing correlations. He concluded that results obtained with standardized reading tests show that comprehension and speed measured on material that is dissimilar will not give comparative scores. Tinker also concluded that reading skills must be measured by identical materials since there is no general reading ability, no general comprehension ability, or no general reading rate.

In 1936 Anderson and Tinker³⁰ made a study in which they tried to determine the relationship between rate of work and achievement score when using the same textual material. They used the first five parts of the Iowa Silent Reading Tests for the investigation. Their results showed a close relation between rate and comprehension when the same material was used.

²⁹Miles A. Tinker, "The Relation of Speed to Comprehension in Reading," School and Society, 36:158-160, 1932.

³⁰V. Anderson and M. A. Tinker, "The Speed Factor in Reading Performance," Journal of Educational Psychology, 27:621-624, 1936.

In another experiment in 1939 Tinker³¹ used material that varied in difficulty, but measured students by material which was identical or closely similar. Rate of correlation was high when easy reading material was used but decreased steadily as the difficulty increased. Tinker concluded that type of material, including some kind of response required in reading tests, also affects the correlation between comprehension and speed.

Sisson³² described the slow reader as a careful, detailed reader and stated that a good reader is characterized by plasticity and ease of change to meet requirements of the particular situation.

Flanagan³³ summarized and interpreted the results of his investigation of 300 eighth grade pupils who had been trained to read and sense questions. He pointed out that increasing the rate decreases the comprehension and that the degree of comprehension is influenced by the purpose for the reading and the difficulty of the material read and by the

³¹Miles A. Tinker, "Speed Versus Comprehension in Reading as Affected by Level of Difficulty," Journal of Educational Psychology, 30:81-94, February, 1939.

³²Donald Sisson, "The Cause of Slow Reading: An Analysis," Journal of Educational Psychology, 30:206-214, March, 1939.

³³John C. Flanagan, "A Study of the Effect on Comprehension of Varying Speeds of Reading," Washington: American Education Research Association, February, 1939, pp. 47-50.

rate of reading. Flanagan concluded that this experiment demonstrated quite conclusively that most tests of reading comprehension in which the time factor was present in any considerable degree provided only ambiguous measures of level or even speed of comprehension.

This study showed that slower readers can be taught to speed up somewhat and still work effectively. The speed of comprehension, therefore, is to a significant degree dependent upon the rate at which a student desires to work.

Most of the experiments discussed so far have been with adults or older readers. There have been very few studies with immature readers and most of them were made before 1925. Only a few have been on this particular problem in recent years. Some of those made, however, do have very significant results.

In his review of tests given to children in grades 1 A, 4 A, and 8 A to determine the rate of reading and degree of comprehension, Hendricks³⁴ states that the results show that the rapid readers in these grades made better comprehension scores than did the slow readers.

Waldo³⁵ studied the correlation between rate and comprehension for children at several grade levels. The results

³⁴Eldo L. Hendricks, A Study in Reading, (Newark, New Jersey: Silver Burdett Co., 1911), p. 32.

³⁵Karl D. Waldo, "Tests in Reading in the Sycamore Schools," (unpublished master's thesis, University of Chicago, Chicago, 1914), p. 37.

of reading. However, the results of the experiment demonstrated quite conclusively that there is a significant difference in the rate of reading between the two groups. The results of the experiment are shown in Table I. The results of the experiment are shown in Table I.

This study showed that there was a significant difference in the rate of reading between the two groups. The results of the experiment are shown in Table I. The results of the experiment are shown in Table I.

Most of the subjects in the experiment had no previous experience with reading. The results of the experiment are shown in Table I. The results of the experiment are shown in Table I.

In his review of the results of the experiment, the author concludes that the results of the experiment are shown in Table I. The results of the experiment are shown in Table I.

Table I shows the correlation between the rate of reading and the results of the experiment. The results of the experiment are shown in Table I. The results of the experiment are shown in Table I.

Table I shows the correlation between the rate of reading and the results of the experiment. The results of the experiment are shown in Table I. The results of the experiment are shown in Table I.

indicated that rapid readers were usually strong in comprehension.

Oberholtzer³⁶ made a comparison of the rate and comprehension scores of 4,692 pupils in fifth and sixth grades. He concluded that those who ranked high in comprehension also made better rate scores. Schmidt³⁷ gave comprehension tests to all pupils in one elementary school. He found that in comprehension the ten fastest readers were superior to the ten slowest ones.

In a study made by Edith Germane in the sixth, seventh and eighth grades and reported by Hillard³⁸ correlations ranging from .20 to .42 were obtained. The comprehension was checked by the number of correct answers to questions covering the material read. The conclusions were that "there is a positive correlation between rate and comprehension." ... "Some rapid readers are poor in comprehension while some slow readers are good in comprehension." ... "The majority of students who comprehend well are slow readers."

³⁶E. E. Oberholtzer, "Testing the Efficiency of Reading in the Grades," Elementary School Journal, 5:313-322, February, 1915.

³⁷William A. Schmidt, An Experimental Study in the Psychology of Reading, (Supplementary Educational Monographs, Chicago: University of Chicago Press, 1917), p. 74.

³⁸Geo. H. Hilliard, "Probable Types of Difficulties Underlying Low Scores in Comprehension Tests," (Studies in Education, Vol. 2, No. 6, Iowa City: University of Iowa, 1924), p. 22.

For the purpose of studying rate and comprehension, Judd³⁹ used the Gray Silent Reading Tests with 1,831 pupils of grades two to eight. The rate records were arranged from the most rapid to the slowest. The most rapid twenty-five per cent made up the fast group. The middle fifty per cent made up the medium group, while the lowest twenty-five per cent were in the slow group. The comprehension scores were arranged in the same manner. These groupings revealed the general fact that high rate and good quality are commonly related.

A study of these investigations leads one to conclude that the degree of relationship varies widely in different studies made with children. The tendency seems to be a variation made from grade to grade, within the same school system, as well as in different ones. In the St. Louis⁴⁰ records, the relationship increases from the second to the fourth grade and decreases in the higher grades. In the eighth grade a negative correlation was obtained. In the Cleveland survey the degree of relationship varied widely for different groups of pupils in the same grade. The

³⁹Judd, op. cit., pp. 153-156.

⁴⁰William S. Gray, "A Study of the Emphasis on Various Phases of Reading Instruction in Two Cities," Elementary School Journal, 17:178-186, November, 1916.

Indianapolis⁴¹ survey showed little or no relationship in the second and third grades but a positive relationship in some of the upper grades. Although the same tests were used in all three of the studies, the results show wide differences in the degree of relationship between rate and comprehension.

A more recent investigation by Blommers⁴² is one of very few which make a real attempt to elevate the intent of the reader to the important position to which it seems entitled in the measurement of reading rate and comprehension. He makes this factor the basis of four of his criteria for valid tests of rate and comprehension and justifies this practice as follows:

It is apparent that there is no meaningful single reading rate (in words per minute) for any given individual, but that instead, he reads at many different rates, each specific to a different purpose. It is, therefore, essential in a relationship study that the purpose of the reading be very carefully defined and controlled. This means, of course, that the purpose must be set in advance for all readers and must be clearly understood by them.

Not only does the reader's purpose influence method of attack and skills employed, but it also seems to be a major determinant in his rate of reading. Despite the fact

⁴¹William S. Gray, "Reading in the Elementary Schools of Indianapolis," Elementary School Journal, 20:608-627, April, 1919.

⁴²Paul I. Blommers, "Rate of Comprehension of Reading: Its Measurement and Its Relationship to Comprehension," Journal of Educational Psychology, XXXV:449-472, November, 1944.

that rate of reading is of secondary importance to comprehension, in both the classroom instruction and in reading measurement, rate is not a negligible factor. Reading activities consume a large portion of school time and teachers are ever desirous of shortening the time consumed in various kinds of work-type comprehension. In discussing this problem Husbands and Shores⁴³ say that a test should include a clear statement of the reader's purpose prior to the actual reading. This would usually take the form of a problem or of questions to be answered. However, research in reading for problem solving is too fragmentary and relatively unexplored for either the teacher or test-maker to know the optimum approach or rate of reading for the most effective solution to various kinds of problems.

Most of the preceding studies concerning mature and immature students have used standard reading tests as means of determining the correlation between rate and comprehension. In many cases the comprehension score is also the speed score. It is the number of items answered correctly in a given time. This makes the speed element a common factor to both the rate score and comprehension score.

⁴³K. L. Husbands and J. Harlan Shores, "Measurement of Reading for Problem Solving: A Critical Review of the Literature," Journal of Educational Research, XLIII:453-65, February, 1950.

that type of reading is of secondary importance in comparison with the primary purpose of reading, which is to obtain information and to develop the ability to use this information. In this connection, it is interesting to note that a recent study by the National Reading Council (1957) has shown that the average reading rate of the general public is about 150 words per minute. This is a rather low rate, especially when one considers the fact that the average person spends about 10 hours per week reading. However, research is being done to develop more efficient methods of reading, and it is hoped that these methods will enable the average person to read more rapidly and with greater comprehension. In this connection, it is also interesting to note that the average person spends about 10 hours per week reading, which is about 10% of his total waking hours. This is a rather low percentage, especially when one considers the fact that reading is one of the most important activities in a democratic society. Therefore, it is important that we should all make an effort to read more frequently and with greater interest.

Now of the preceding studies concerning nature and manner of the reading process, it is interesting to note that the correlation between rate and comprehension is not as high as it is often assumed to be. In many cases, the comprehension score is also the speed score. It is the number of items answered correctly in a given time. This makes the speed element a common factor in both the rate and comprehension scores.

K. L. Hubbard and J. R. Hayes, "Measurement of Reading for Problem Solving: A Critical Review of the Literature," *Journal of Educational Research*, 1957, 50, 251-260.

The investigation described in the following pages was designed to study the relationship between rate and comprehension under conditions in which an effort to control the speed factor on comprehension has been made.

Selection of reading material used in this experiment was based upon the following criteria: (1) the content of the material was taken from the social studies field, (2) interesting and worthwhile material was used, (3) because the effect of purpose on reading of two different types of material was to be checked the selections were both fictional and factual, (4) children had not read the material previously, (5) the selections were from material commonly used by fifth grade children. (6) the materials were of comparable length, averaging about 1200 words each.

The material was selected from the following sources: 1. Fictional material was chosen from the following sources:

These materials were written by people who are recognized as leaders in both the reading and social studies fields and are published by reliable sources of long standing. It was therefore, believed that the material was of high quality and was suitable for the grade level of fifth grade.



CHAPTER III

METHOD OF CONDUCTING THE STUDY

Description and preparation of testing material. Sele-

tion of reading material used in this experiment was based upon the following criteria: (1) the content of the material was taken from the social studies field, (2) interesting and worthwhile material was used, (3) because the effect of purpose on reading of two different types of material was to be checked the selections were both fictional and factual, (4) children had not read the material previously, (5) the selections were from material commonly used by fifth grade children, (6) the materials were of comparable length, averaging about 1200 words each.

The two fictional selections were taken from Days and Deeds.¹ Factual material was chosen from My Weekly Reader No. 5.²

These materials were written by people who are recognized as leaders in both the reading and social studies fields and are published by reliable companies of long standing. It is, therefore, reasonable to believe that the materials were adapted, as nearly as possible, to the grade level for which they were designed.

¹Gray, op. cit.

²My Weekly Reader, op. cit.

ANALYSIS OF THE MATERIALS

tion of reading material used in the experiment was based upon the following criteria: (1) the extent of the material was taken from the general public; (2) interesting and worthwhile material; (3) suitable for the needs of the poor in reading; (4) the material was of interest and educational value; (5) the material was of interest to the children and not too technical; (6) the material was of interest to the community as a whole; (7) the material was of comparable length, averaging about 1200 words each.

The two fictional selections were taken from Days and Nights.¹ Fictional material was chosen from Weekly Reader No. 1.

These materials were written by people who are recognized as leaders in both the reading and social studies fields and are published by certain companies of long standing. It is therefore reasonable to believe that the materials were adapted, as nearly as possible, to the grade level for which they were designed.

¹Days, pp. 41-42.

²My Weekly Reader, pp. 111.

Questions which were a part of these materials were used. After the trial test in September, 1948, the questions were revised. The experimenter administered the tests to each group.

Types of tests. A multiple choice test consisting of fifteen items was constructed for each selection. Each item had three possible choices from which the pupil was to choose the correct one. Some items tested for knowledge of facts, while others tested for understanding.

Tests were administered to all pupils who were enrolled in fifth grades of the Artesia, New Mexico, schools on the days of testing and who had taken previous tests. Only those pupils who completed all four tests were counted in the final tabulation. Those who were absent, or who for other reasons failed to complete any one of the tests, were eliminated in the actual scores. Seven were not present for one test. Others failed to write down the number of the selection or the time. The results for a pupil were not used unless a time score and a comprehension score were available for each selection.

Administration of tests. The tests were given on the third Wednesday of October, December, February and April. Each group was asked to participate in an experiment to find which was the better way to read. After a brief, friendly

Students which were a part of the school system. After the first year of the school, the students were placed in the school system. The students were placed in the school system. The students were placed in the school system.

Types of tests. A typical school test consists of

written tests and oral tests. The written tests are of two types: the multiple choice test and the essay test. The oral tests are of two types: the oral question and answer test and the oral presentation test. The oral presentation test is a test in which the student is required to present a paper or a project to the class.

Tests were administered to the students who were enrolled

in the school at the time. The tests were given on the

days of testing and were held during the school day. Only those

students who completed all the tests were counted in the final

calculation. Those who were absent or who for other reasons

failed to complete any one of the tests, were eliminated in

the final calculation. Scores were not present for one test.

Others failed to write down the number of the selection or

the time. The results for a paper were not used unless a

time score and a comprehension score were available for each

selection.

Administered by tests. The tests were given on the

first Wednesday of October, December, February and April.

Each group was asked to participate in an experiment to find

which was the better way to learn. This was done by having

introduction the test was given. The fictional selection from Days and Deeds³ was administered first. The subjects were instructed "to read as rapidly as possible and still understand what you are reading." After the first two minutes, the time was written on the board at one minute intervals. When a pupil completed his reading he was to record in the proper space the number on the board. The reading selection was to be placed to one side and the sheet containing the questions opened. Time was allowed for answering the questions. Before the selections were opened the directions and the questions on the selection were read aloud by the teacher with the pupils following the reading from their papers. The factual selection given in February, 1949, was administered in the same way.

The second test from Days and Deeds⁴ which was given in December, varied from the first in that the questions were distributed after the reading of the selection by the subjects.

The fourth test from My Weekly Reader,⁵ administered on the third Wednesday of April, was handled in the same way as the second test.

³Loc. cit.

⁴Loc. cit.

⁵Loc. cit.

CHAPTER IV

ANALYSIS OF THE DATA

One purpose of this investigation was to determine the relationship between speed of reading and the amount of comprehension. The subjects were to read each of the four selections at their normal reading rate. The time required to read a particular selection varied with each pupil while the amount read was constant. The comprehension scores were determined by tests administered immediately after the reading of each selection. The correlation between the time required for the reading of the selections and these comprehension scores shows the relationship between the rate of reading and comprehension under the conditions of this experiment.

In making the correlation charts the time scores were plotted against the comprehension scores. The correlations are given in Table I. On two of the selections the correlation is high enough to show a significance between rate and comprehension. The two tests, in which the questions were read first, show a much higher correlation.

The coefficients represent the relationship between reading time and comprehension. Since the amount read was constant for each selection these coefficients represent the relation between reading rate and comprehension. Unless motivated by a definite purpose, the relation between rate and

relationship between the rate of reading and amount of comprehension. The subjects were given a series of tests at their normal reading rate. The first test was a reading test. The subjects were then given a comprehension test. The results of the tests are given in Table I. On two of the relations the correlation is high enough to show a significant relationship between rate and comprehension. The two tests, in which the questions were read first, show a much higher correlation. The coefficient represents the relationship between reading time and comprehension. Since the amount read was constant for each subject, these coefficients represent the relation between reading rate and comprehension. This is indicated by a definite power, the relation between rate and

comprehension scores was low. This is in agreement with conclusions drawn by Yoakum.¹

TABLE I

COEFFICIENTS OF CORRELATION
BETWEEN READING TIME AND COMPREHENSION SCORES

Selection	Number of words per selection	
1	1208	+ .78
2	1202	+ .47
3	1192	+ .65
4	1214	+ .41

Using this interpretation of the comprehension scores as a basis, one may conclude that this experiment shows a definite correlation between rate of reading and the amount comprehended. There is proof, therefore, that pupils who read at the fastest rate comprehend more, and that the slow readers comprehend less. This experiment seems to reiterate findings in education and psychology--namely that a positive and moderately high correlation exists between rate and comprehension is proved.

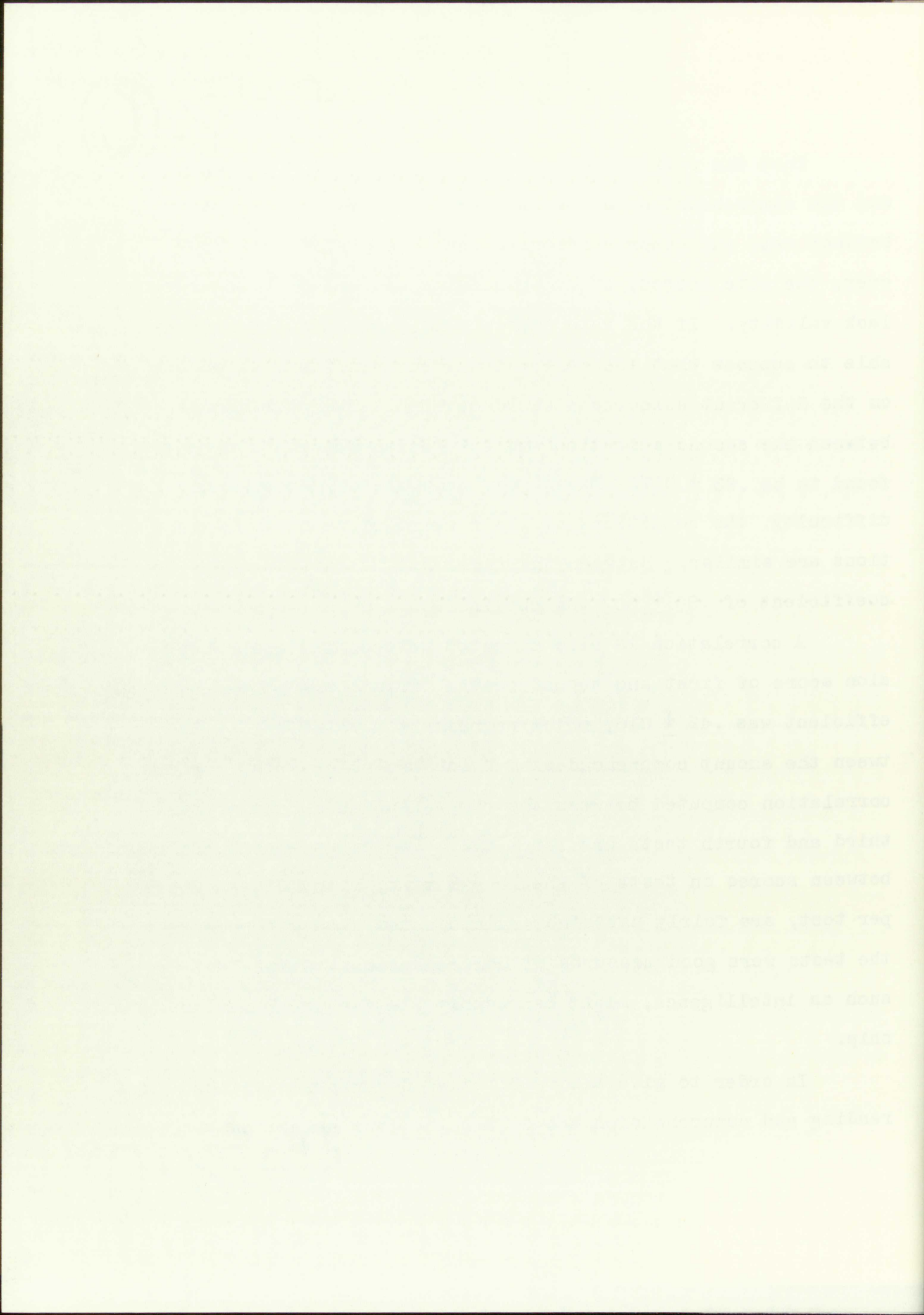
It is interesting to note that the correlations obtained here are significant for all four selections of material, representing two types.

¹Gerald Alan Yoakum, Reading and Study, New York: The Macmillan Company, 1933, p. 205.

That the positive correlation between the rate scores and the comprehension scores signify a definite relationship between rate and comprehension is one interpretation. However, the rate scores, or comprehension scores, or both, may lack validity. If the rate scores were invalid it is reasonable to suppose that the correlations between the rate scores on the different selections could be high. The rate scores between the second selection and the fourth selection were found to be $.63 \pm .017$. Except for probable differences in difficulty, the conditions of the reading of these two selections are similar. Between the first and third selections a coefficient of $.85 \pm .007$ was obtained.

A correlation is also computed between the comprehension score of first and second tests. This correlation coefficient was $.42 \pm .016$, which represents a relationship between the amount comprehended on these two selections. Another correlation computed between the comprehension scores of the third and fourth tests was $.45 \pm .023$. These inter-correlations between scores on tests of the length read, with fifteen items per test, are fairly satisfactory and constitute evidence that the tests were good measures of comprehension. Other factors, such as intelligence, might be responsible for the relationship.

In order to give a more detailed description of the reading and comprehension scores for the four selections,



scores corresponding to various percentiles were computed. The distributions of rate scores in words per minute are given by percentiles in Tables II and III.

TABLE II
PERCENTILES OF READING SCORES FOR TESTS 1, 3

<u>Percentiles</u>	<u>Words per Minute</u>	
	<u>1</u>	<u>3</u>
99	794.35	554.41
90	378.67	361.20
75	272.40	240.21
50	206.14	185.15
25	154.13	142.82
10	123.35	110.55
1	68.59	62.93
Mean	237	210

Percentile 99 for Test 1 is high. All others are comparable. Both Tests 1 and 3 show a wide range of reading rate. These two tests were presented in the same manner, with the only difference being the type of material read.

Table III shows that words read per minute for Tests 2 and 4, which were given in the same way, are consistent in the different percentile points.

Results corresponding to various percentages were computed.

The distribution of test results is shown per minute and

Table II presents the results of the tests.

TABLE II

PERCENTILES OF RESULTS FOR TEST 1, 2

Percentile	Test 1	Test 2
95	104.41	104.41
90	101.97	101.97
75	97.50	97.50
50	92.50	92.50
25	88.13	88.13
10	83.75	83.75
5	81.25	81.25
Mean	80.00	80.00

Percentile 95 for Test 1 is high. All others are com-

parable. Both Tests 1 and 2 show a wide range of reading

rate. These two tests were presented in the same manner, with

the only difference being the type of material read.

Table III shows test results per minute for Test 2

and 4, which were given in the same way, are consistent in the

different percentile points.

TABLE III

PERCENTILES OF READING SCORES FOR TESTS 2, 4

<u>Percentiles</u>	<u>Words per Minute</u>	
	<u>2</u>	<u>4</u>
99	539.38	490.64
90	338.38	319.92
75	246.94	230.25
50	185.01	180.77
25	148.62	132.99
10	119.61	105.24
1	<u>79.53</u>	<u>62.88</u>
Mean	214	196

With the exception of the 99th percentile, the number of words read per minute at the various percentile points was consistent for the four selections. This seems to indicate that neither the type of material nor the purpose for reading had much effect on rate of reading.

From Table IV it is seen that Test 1 is consistently high as compared to Test 3. These tests were of different types of material but were presented in like manner.

Table V shows that the scores on Tests 2 and 4 are consistent in all percentiles. They are, also, of different types of material, but were presented in the same way.

TABLE IV

PERCENTAGE OF WORDS READ FOR TABLE I

Percentile	Words per Minute
95	105.00
90	100.00
85	95.00
80	90.00
75	85.00
70	80.00
65	75.00
60	70.00
55	65.00
50	60.00
45	55.00
40	50.00
35	45.00
30	40.00
25	35.00
20	30.00
15	25.00
10	20.00
5	15.00
0	10.00

With the exception of the 95th percentile, the number of words read per minute at the various percentile points was consistent for the four selections. This seems to indicate that neither the type of selection nor the purpose for reading had much effect on rate of reading.

From Table IV it is seen that Test I is consistently high as compared to Test II. These tests were of different types of material, but were presented in like manner. Table V shows that the scores on Tests I and II are consistent for all percentiles. This also, of course, indicates that the type of material, but was presented in the same way.

TABLE IV

PERCENTILES OF COMPREHENSION SCORES FOR TESTS 1, 3

Percentiles	Comprehension Scores	
	1	3
99	15.00	13.50
90	14.94	11.11
75	12.11	9.16
50	12.94	6.95
25	11.21	4.91
10	8.84	3.58
1	4.02	.90
Mean	11.99	6.72

TABLE VI

VARIABILITY OF READING RATE

TABLE V

PERCENTILES OF COMPREHENSION SCORES FOR TESTS 2, 4

Percentiles	Comprehension Scores	
	2	4
99	14.15	13.50
90	12.18	11.62
75	9.83	9.79
50	8.67	8.07
25	6.01	6.17
10	4.16	4.60
1	2.44	2.25
Mean	7.59	7.60

TABLE 1

PERCENTILES OF CUMULATIVE AVERAGE FOR TESTS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Percentiles	1	2
99	10.50	10.50
90	11.11	11.11
75	9.16	9.16
50	8.82	8.82
25	4.41	4.41
10	3.68	3.68
1	2.50	2.50
Mean	8.75	11.92

TABLE 2

PERCENTILES OF CUMULATIVE AVERAGE FOR TESTS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Percentiles	1	2
99	15.50	14.16
90	11.62	12.45
75	9.79	9.87
50	8.07	8.87
25	5.17	6.61
10	4.60	6.16
1	3.38	5.44
Mean	7.46	8.75

The possible comprehension scores at the different percentiles were somewhat alike for Tests 2, 3, and 4. Scores for Test 1 were much higher. It is interesting to note that the medians of reading scores for Tests 2, 3, and 4 are also comparable at the different percentiles, while the median for Test 1 is somewhat higher.

Variability of reading rate. Another interesting feature of the present investigation was the study of the variability in reading rate in a selection of fifth-grade pupils. Table VI presents data relative to different rates at which pupils read the selections.

TABLE VI

VARIABILITY OF READING RATE IN WORDS PER MINUTE

<u>Selection</u>	<u>Range</u>	<u>Percentile</u>	<u>Percentile</u>	<u>S. D.</u>
		<u>10th</u>	<u>90th</u>	
1	56-1098	123	379	129.90
2	49-609	120	338	94.80
3	37-906	111	361	98.40
4	35-711	105	320	87.90

The range of individual reading scores was great on all four selections showing that the problem of individual differences is a vital one. The large standard deviations emphasize this variability in reading rate. The data shown in Tables III, IV, and V also show the extent of variability in reading

rate in the investigation. There were differences in the level of understanding to which the pupils aspired. These differences are reflected in the differences in rate. Such differences are usually to be found in a group of pupils.

The effect of purpose and type of materials. The principal problem of this investigation was to determine the effect of types of material and the effect of purpose for reading on the variability of the rate of reading and of comprehension. Fictional and factual materials were used. The range in the rate of reading as shown in Table VI is 1042 words per minute on Test 1, and 869 words per minute on Test 3. Standard deviations were 129.90 and 98.40 words per minute respectively. On Tests 2 and 4, in which the pupils did not have the questions presented to them before the reading, the range was from 560 to 676, with standard deviations of 94.80 and 87.90 words per minute respectively.

The following table reveals that the (means on these) four selections did not show such a great variation. On Test 1 the mean is 237. Tests 2, 3, and 4 each show 214, 210, and 196 respectively. This range is to be expected.

Table VII reveals purpose and rate had little effect on comprehension. Test 1 shows a comprehension mean of 11.99 and Test 2 a mean of 7.59. On the other hand the standard deviations are 2.44 and 2.80. These tests were on fictional material. In Test 1 the questions on the reading material

level of understanding as shown
differences are not significant
the extent of business and
principal problem of this study
effect of type of material
reading on the variability of
presentation. Methodological and technical
range in the rate of reading
words per minute in Test 1 and
standard deviations were 10.5 and
respectively. On Tests 2 and 3
have the questions presented in
range was from 88.0 to 87.5, with
and 87.90 words per minute respectively.
The following table summarizes
four sections 215 and show each
the mean is 83.7. Tests 2, 3, and 4
138 respectively. This range is
Table VII reveals pattern analysis
on comprehension. Test 1 shows a mean of 83.7
and Test 2 a mean of 87.5. On Test 3 the mean is 87.9
deviations are 10.5 and 10.5. The range is 88.0 to 87.5
material. In Test 1 the questions are presented in

TABLE VII

MEANS AND STANDARD DEVIATIONS

<u>Selection</u>	<u>Reading Rate Scores</u>		<u>Comprehension Scores</u>	
	<u>Mean</u>	<u>S. D.</u>	<u>Mean</u>	<u>S. D.</u>
1	237	129.90	11.99	2.44
2	214	94.80	7.59	2.80
3	210	98.40	6.72	2.88
4	196	87.90	7.60	2.52

case, the highest and lowest two per cent of those on Test 3 were presented to the pupils before the reading and in Test 2 the questions were presented after the reading of the material.

Tests 3 and 4 were on factual material. Test 3 was given in the same manner as Test 1; Test 4 was presented in the same way as Test 2. The preceding table shows that Test 3 shows a comprehension mean of 6.72 and Test 4 a comprehension mean of 7.60, while the standard deviations are 2.88 and 2.52 respectively. Pupils might have suspected that a test would follow.

In this investigation the type of material did not seem to have any great effect upon the reading rate except with the fictional material in Test 1. The high mean comprehension score in Test 1 would indicate that the material was very interesting and that concepts developed there were within the grasp of most of the pupils. The other three selections were read at about the same rate, and about the same amount was comprehended from each. The reason for this may

be that Test 3 and Test 4 were easier, or that there was not a great deal of difference in the difficulty of the concepts developed in these tests.

While the study does not reveal that fast readers adapt their rates to the type of material read any better than do slow readers, it is possible that the pupils who comprehend well do make better adaptations of rate to type of material. In order to determine whether or not this is the case, the highest and lowest ten per cent of those on Test 3 were compared as to their rate on Tests 2 and 4. The comparisons are shown in the following table.

TABLE VIII
COMPARISON OF RATE AND COMPREHENSION
AS DETERMINED BY TEST 3

<u>Highest 10 Per Cent</u>			<u>Lowest 10 Per Cent</u>	
<u>N = 74</u>			<u>N = 72</u>	
<u>Selection</u>	<u>Comprehension Scores</u>	<u>Words Per Minute</u>	<u>Comprehension Scores</u>	<u>Words Per Minute</u>
3	11.81	192	3.14	217
2	12.99	265	9.56	234
4	8.76	199	4.57	249

There is a suggestion that adaptability is affected by the comprehending ability of the pupils. With the exception of Test 2, those pupils making a higher score read more slowly

than those pupils who made a lower score. Since these results are based upon only a part of the distribution, the usual statistical tests of significance of difference can not be applied.

There is a positive and moderately high correlation between reading rate and comprehension. This study, therefore, is in agreement with most of the research which has shown that rate and comprehension are positively correlated.

2. The correlation between reading rate and comprehension is positive in both types of material, prose and fiction.

3. Since variability of reading scores was found to be very great, the problem of individual differences can be said to be vital at this level.

4. The rate of reading was found to be significantly different for the two types of material. There was a significant difference in the rate at which the pupil read the prose and fiction selections and the rate at which the pupil read the prose and fiction selections.

5. The comprehension scores were found to be significantly different for the two types of material. There was a significant difference in the comprehension scores for the prose and fiction selections.

6. The correlation between reading rate and comprehension was found to be significantly different for the two types of material.

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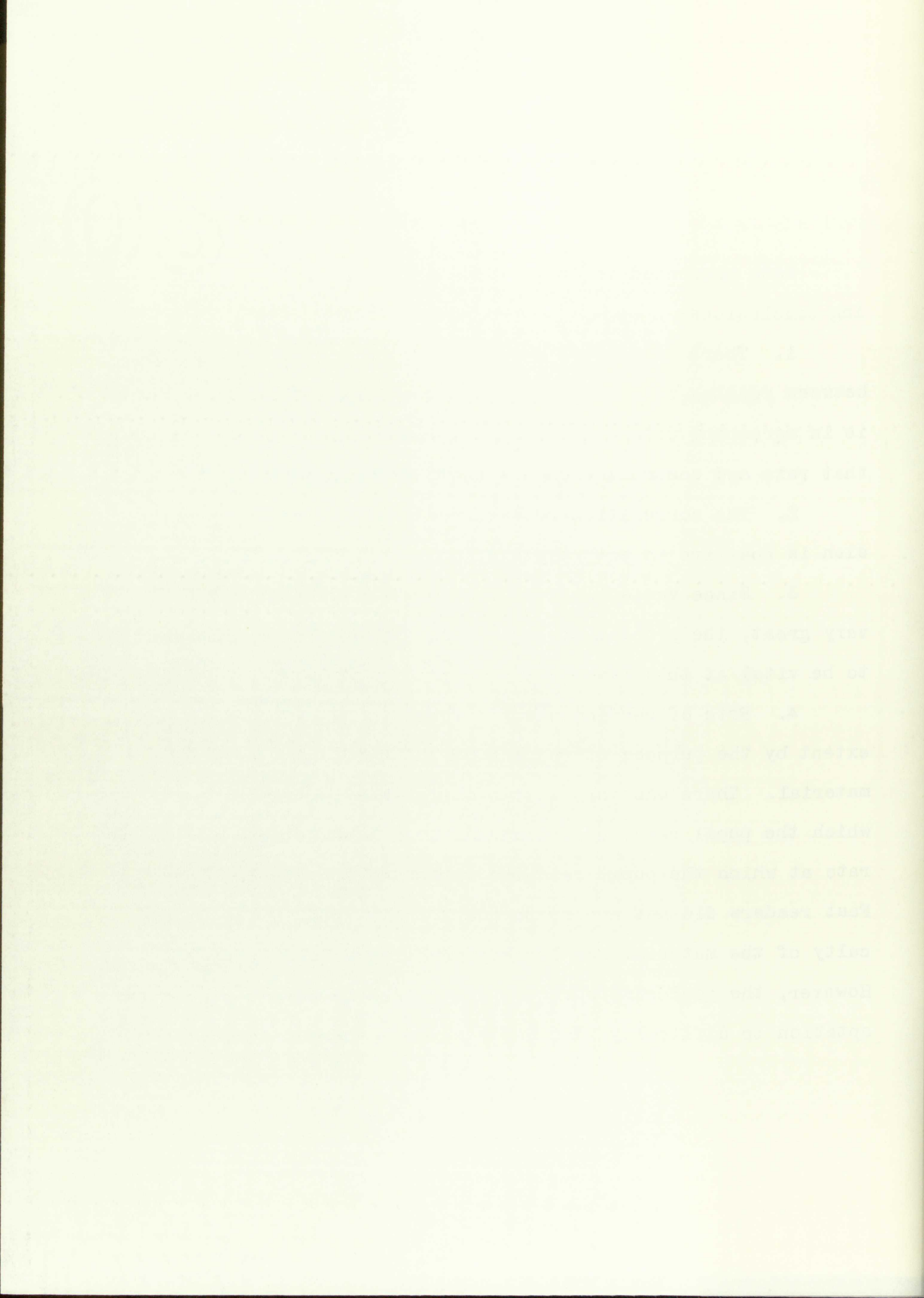
they are very much interested in the discussion, and
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CHAPTER V

CONCLUSIONS

Data presented in this study seem to warrant the following conclusions:

1. There is a positive and moderately high correlation between reading rate and comprehension. This study, therefore, is in agreement with educators and psychologists to the effect that rate and comprehension are positively correlated.
2. The correlation between reading rate and comprehension is positive in both types of material, fact and fiction.
3. Since variability of reading scores was found to be very great, the problem of individual differences can be said to be vital at this level.
4. Rate of reading was not found to be affected to any extent by the purpose of reading or the difficulty of the material. There was very little difference in the rate at which the pupil read the second and fourth selections and the rate at which the pupil read the first and third selections. Fast readers did not appear to adapt their rate to the difficulty of the material any better than did the slow readers. However, the good comprehenders did appear to make better adaptation to difficulty than did the poor comprehenders.



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Journal of the
American Psychological Association
1937

Volume 44, Number 1
January, 1937

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