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The Relationship Between the Ordinal Position in the Family and Reading Achievement of Third Graders in Yakima, Washington

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THE RELATIONSHIP BETWEEN THE ORDINAL POSITION IN THE FAMILY AND READING ACHIEVEMENT OF THIRD GRADERS IN YAKIMA, WASHINGTON

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CHAPTER I

THE STATEMENT OF THE PROBLEM AND THE TERMS USED

All educators and most parents have the same goal for boys and girls; for them to grow up to be well adjusted, honest, responsible human beings.

Many aspects are involved in the development of the total personality of each child and the successes and failures with which he will be identified. One of the earliest evaluations of success is measured by the child's ability to progress, at a pre-determined rate, in the processes of reading. His inability to read at a level commensurate with other children of his own age marks him in his own eyes and in the eyes of his friends as a failure.

I. THE PROBLEM

Since many children fall in the category of reading below grade level, there is a constant desire on the part of educators to determine the factors of causation. If any reasons for a child's inability to read satisfactorily can be analyzed, it is to the child's advantage to have this done as early as possible.

There is general agreement in the literature on remedial instruction that before the child can qualify for remedial reading, the gulf between his ability and his achievement should measure at least a year (19:370). Since

some first graders do not learn to read during the early part of the school year, the third grade would be the earliest year in which the gulf of one year could be established.

Although differences of I.Q. of children would allow for a wide range of reading ability, many other factors may be involved: chronological age, physical size, physical health, nutrition, economic status, experiences, number of books in the home, education of parents, ordinal position of the child in the family, child-parent relationships and others.

Which of these factors, if more were known about it, might give a better understanding of the child? No one can give him a different birthday, add inches to or subtract them from his girth or stature, give the family a higher income, require his parents to read more books or take him on trips or vacations.

In extreme cases, a hot, balanced lunch can be provided at noon, but this will not improve the nutrition he receives at home. Neither can parents be forced to allow for individual differences of the children in their family. But, if evidence could be shown them that the ordinal position of the child, and the child's reactions to it, can affect his ability to learn to read, perhaps they and his teacher could attempt to create more favorable attitudes in the child. The importance of the birth order into the family is the area this researcher would like to investigate further.

II. IMPORTANCE OF THE STUDY

At a very early age, each child develops attitudes and feelings towards himself as well as towards other members of his family. The way in which the personality of each child develops will be altered by the other individuals with whom he has daily contacts. It is possible that a better understanding of the feelings of children, and their causes and the avoidance of undesirable ones, could shape the pattern of their entire lives.

> The child's development depends to a large degree on his position within the family. In his early relationship to other members of the family, each child establishes his own approaches to others in his effort to gain a place in the group. The sequence of birth provides each child with a different point of view within the family set-up. His position as the only, the oldest, the youngest, or the middle child, as the case may be, gives him different opportunities for exerting himself and presents him with particular challenges (12:9).

Only a few studies have been made in an attempt to discover if the child's birth order into the family has any effect upon his ability to learn to read. Perhaps a knowledge, by parents and teachers, of the ways in which a child can be helped to develop secure feelings concerning his ordinal position may alleviate undue mental stress and tensions.

III. DEFINITIONS OF TERMS USED

For the purpose of this study, the terms listed below were defined in the following manner:

Dethroned. Dethroned and dethronement are used to describe the feelings a child incurs when a new baby arrives in the home and the older child is no longer the center of attention.

Middle. The word middle shall be interpreted as meaning any or all of the children in a family which consists of at least three children, and who are neither the oldest nor the youngest.

Onlies. The words "only" or "onlies" pertain to a single child in a completed family in which there is reason to believe that no other children will be born.

Ordinal. The word ordinal indicates order of succession or position in a series, such as first, second, etc.

Sibling. The word sibling refers to one of two or more children of the same parents. For the purpose of this study, it will be used to denote all children being reared in a family, whether they are natural or adopted children.

IV. HYPOTHESIS

There will be no statistically significant differentiation in reading scores brought about by the child's ordinal position in the family and his reaction to it.

The four ordinal positions considered and included in this hypothesis will be the oldest child, the middle child, the youngest child, and the "only" child.

. These ordinal positions will be classified in four intelligence divisions with each one compared in vocabulary and comprehension tests.

CHAPTER II

REVIEW OF LITERATURE

I. EFFECTS OF BIRTH ORDER POSITION

Since every child in any family, of necessity, falls within one of four ordinal positions, not a single one escapes whatever advantages or disadvantages that particular position holds. All individuals have deep-seated feelings about themselves, and their relationships with other members of their families and society. With maturity comes the ability to define and control these feelings, but children need help in knowing why they feel the way they do, and how to cope with these feelings.

Although parents have the first responsibility of developing, within each child, attitudes that will make it possible for him to adapt himself to changing positions in the family, many are not aware that anything can or should be done. Too often parents expect that children will automatically fit into whatever slot their position happened to be without causing any friction in the family pattern of living.

The incident of being born first or last or in the middle does make a difference in a child's experiences, but it is not necessarily good or bad. There are advantages and disadvantages to each position. There are many aspects of childhood and all affect the experiences of each child

differently. The order of birth probably is not as important as the attitudes and responses of the family into which he is born.

Unlike the disagreement authors found of the effect that ordinal position has upon children, many authorities agree upon the characteristics which are composites of several writers and would require multiple credits.

II. CHARACTERISTICS OF ORDINAL POSITIONS

The oldest child. The oldest child in a family of more than one child has the unique position of being the one child, who for a time is an "only" child. This is at the same time advantageous and disadvantageous. The only adjustments the first-born has to make are to adults, who are usually pliable and tolerant. Being the sole recipient of his mother's attention for a time may give him an extra degree of self-esteem for life.

Then comes the arrival of a second child, which presents a crisis. The oldest child is dethroned and must adjust to this situation, and the effort to do so causes many behavior problems which affect the child and the family. His first effort generally is to regain the attention that has been diverted from him to the new arrival. The inner pulls and tensions play a part in shaping the personality of the first-born.

Sometimes a child turns his anger inward on himself.

His attitude becomes one of feeling that he is no good. He thinks he will not be able to do things, so he gives up and will not try. Because such a boy or girl is less trouble than one whose anger is on the surface and directed toward other persons, he may not get the help he needs.

Parents are often stricter with the first child than with ones which follow. Just because he is oldest, they may expect him to be more dependable and responsible. Even though his parents may not expect too much of him, the child himself may feel the strain of the younger ones catching up with him in various ways (17:85). If this should happen, the parents would be wise to help the child develop interests outside the family, to relieve pressures and tensions.

If the oldest child has survived the blows of early childhood, he may be equipped with the elements that make for development of leadership. With the growth of younger children, he naturally assumes this position. Ordinarily he is bigger and stronger and is looked up to by the younger children as the one who gets to do things first. The oldest child is apt to mature more quickly because of his reign for a time as an only child. His parents expect more from him intellectually, emotionally and physically. As younger brothers and sisters grow up, the oldest child values the prestige of his position. He may be given more responsibility by his parents for care and safety of younger ones, and accepts this responsibility as a way of winning approval by his parents.

The oldest child recognizes that because of his greater skills and more mature intellect, he has advantages over the younger ones. But, for some, these advantages of the oldest are offset by a desire for the privileges of the younger ones. In fact, this may keep him from wanting to go to school at all. The idea of leaving younger brothers and sisters at home to enjoy themselves with mother while he has to go away to work hard at school, may be just too much. He may decide he would rather stay home with mother, too. He may refuse to go to school, or stage an upset stomach so nobody can make him go. This situation usually signifies a problem in the relationship of children in the family.

Occasionally a young child surprises his parents at the time of the arrival of the second child. The great contrast in size, in abilities, and in behavior between the baby and himself apparently makes him realize how grown-up he is. This gives him pride and stimulates him to go further still. Since he has passed through a real crisis and has not been defeated by it, he will have been strengthened. He will end up surer of his parent's love, more tolerant of other children, and with a greater ability to cope with life (35:88). However, many parents report that the oldest child, whom they had worried about, turned out to be unusually successful in fields which involve sympathetic understanding of other people, such as medicine, teaching, social work and parenthood (38:75).

. The middle child. The middle child has the reputation of being the neglected child. This supposedly was due to the novelty of parenthood having worn off, and the idea that the most cherished child is the last. But, in many ways, the middle child has advantages. Having used a trial and error method in rearing the first, the parents are more confident, more positive and sure about themselves. The middle boy or girl is often spared the demands made upon the first and the restrictions placed upon the last. When parents tend to be anxious concerning their children, the middle child often escapes a large part of their nervous attention (17:85).

During the time that he is the youngest in the family, he holds a favorable position. Because of having parents who are experienced, he is less restricted and is treated with more emotional warmth than the oldest child. This child enters a more complex family situation than the first-born. Since he will never be an only "child," he must adjust to adults and another child; one who will be bigger and stronger. He will, at an early age, have to learn to defend himself.

The really big impact comes when this child's dethronement takes place when the next baby comes along. He now experiences what he precipitated for the oldest child, but he is being attacked from both the front and the rear. He not only loses his status of being the baby, but is sandwiched

in between this bigger, stronger, more experienced child and the new one who is getting the attention he himself craves (5:108).

The position of the middle child is particularly precarious. Having neither the rights of the older nor the privileges of the younger, he often feels unfairly treated.

The older child may welcome the new arrival as an ally and join forces with the third child. He remembers how he felt when he was dethroned, and may be gloating that the second child has lost his status as the baby of the family. And, so it will continue throughout his entire life. Always the child in front with whom he struggles to catch up, and behind him, the younger, more helpless baby. He has three possible choices. He can drive himself relentlessly in an effort to catch up to or overtake the oldest child. A child with energy and a certain capacity for development will often follow this line. It is from just such situations as this that has led psychologists to remark that the restless neurotics are, to a large degree, second-born children. Another possibility is to criticize and depreciate the older child in an attempt to equalize the struggle. The less competent child will often resort to this. He builds himself up while he tears his competitor down. This accounts for sibling animosities which prevail in many families. The third possibility is for the middle child to drop back and affiliate with the younger one. From this may result an attitude of defeatism and loss of initiative (5:115).

'Deep down, the middle child envies the older child for his freedom and skills and the praise he receives for his achievements. He is equally envious of the indulgences granted the younger one. Since he cannot get attention in either of these two directions, he may resort to any means of attaining it.

The middle child doesn't necessarily give up the fight and become submissive. He may fight back and demand his rights, or he may try to make up for the neglect he feels by becoming completely independent. Unless his parents do something to relieve the tension, this child may feel that his parents are against him, too. He must also be watched for signs of quiet withdrawal.

Being old enough to go to school will minimize the disadvantages of the child in this position, and he may benefit because of it. He has escaped many of the pressures put upon the oldest child, so he may be emotionally more stable and mature. Because he did not have sole attention of parents and doting grandparents, it is likely that he banished babyish talk and manners early, which may show a trend to promote his progress. Since he has not been indulged as the baby of the family, and yet had to adjust to several members of his family, he may adjust more easily at school without making undue demands.

His striving to compete with older siblings may keep him thin and high strung, but occasionally this kind of

ambitiousness produces very strong leadership qualities in the second child. It is usually of the constructive type and the results will depend on whether or not the competitiveness is balanced by ordinary amounts of judgment (35:66).

The youngest child. Many feel that the favored position in the family is to be the youngest. Parents are more relaxed and there are fewer restrictions. The child in this position is probably more spontaneous and creative than older ones. But, many children in this category have to struggle for recognition of their achievements. Everything has been done by older children, so his parents are less appreciative. He has less incentive and is less eager to progress when his achievements are not acknowledged (17:CH. IV).

However, he may feel that he has his parents approval by staying a baby, so he hangs on to childish ways and habits. The enjoyment by parents and brothers and sisters of his "cute" ways may hold him back in his effort to be grown-up. He needs to be encouraged to make growing-up a rewarding proposition, but must not be allowed to exploit his special place in the family.

Even with wise parents there is a tendency to prolong the last babyhood. The parents are older; their financial position is generally stronger. The cultural opportunities open to this child are consequently greater than those afforded the older children. Discipline may break down with him largely or completely (5:115).

Cattell (7:803) feels that in this country where families are apt to improve their economic condition, the younger son may be more likely to be sent to college than the older children.

The youngest, similar in some ways to an "only" child, can find a variety of methods to compensate for a position that often evokes inferiority feelings. He may solicit the services of others by being helpless and weak (12:11).

Youngest children are often jealous and resentful of being bossed by older ones and are jealous of their freedom and skills. They show it in their eagerness to go everywhere and have everything that is permitted the older ones. They may feel that it is necessary to follow in the footsteps of older ones to be successful, so they tend to feel happiest playing their games, preferably with them.

On the other hand, the older children may "spoil" him, buy things they remember they were deprived of, and fight his battles for him. They may steer him in advantageous directions and make his life a relatively easy manner. This may cause him to refrain from developing his own powers. He may develop an attitude of waiting for someone else to do things for him instead of trying to do them himself.

Another possible avenue open to the youngest child is to drive himself relentlessly forward in an effort to catch up with, or even surpass, one or more of the other children in the family.

The only child. Almost one-fifth of the completed families have only one child. Contrary to the general impression, an "only" child is not necessarily one who is over-indulged. Some parents are far too strict in an effort to avoid spoiling him. Although it is difficult, parents of "onlies" must be careful not to concentrate too much of their attention on their boy or girl. But, most of all, they must be consistent. Whether they tend to be too indulgent or too exacting, they must not swing from one extreme to the other.

The danger in spoiling an "only" is not by too much love, but by too much anxiety and abnormal protectiveness. When that happens, the result is an overdemanding child who has been denied a chance to grow up. The child is forced to be dependent when he is trying for independence. This frustration is one cause of immaturity (48:93).

The "only" child lacks the things that siblings give each other. Siblings force each other to keep in touch with reality. They save each other from too close association with and too much attention from their parents. Parents of "onlies" tend to overemphasize minor problems and achievements and to introduce him to adult activities too soon (10:7).

The "only" child needs to be around people younger than his parents. He should be encouraged to have other children around to learn what they are like. It is better to have a group of children rather than one child. It is

also good for this child to experience the feeling of someone or something being dependent upon him. Being responsible for the care of a pet may be helpful in a child's growing up (48:92).

One problem of the "only" child which must be solved is that he tends to cling longer to the concept of being the center of the family, and later of the world beyond his family. As he discovers that he is not the center, he becomes frightened. He attempts to make himself a focal point since this is the only way he is convinced of his security. It is more difficult for him to learn the give-and-take of social living with other children if his first experience of this kind is in the impersonal environment of the nursery school, the playground or a neighbor's home (24:Ch. 26).

If the parents are sensitive to the child's needs to adventure beyond the bounds of home and help him develop friendly relations with other children, his "onliness" may not be a handicap.

There are also several advantages of being an "only" child. This child does not have to jockey for position in the family. If his parents are happily married, he is very secure. Since the family resources do not have to be divided to meet the needs of several children, the "only" child usually has the experience of special camps, private lessons of various kinds, and frequent trips and visits to relatives. His parents have more time to devote to supervision and

guidance. They show in many ways that they expect much of him and so hold him up to making the most of himself (10:7).

If given the chance, the "only" child learns to be more independent and self-reliant because he has to compensate for the companionship that he lacks. His parents concentrate more of their time and interests on his growing up. With this smaller group, they are able to share experiences with him that would be impossible with larger families. They may teach him more and help educate him with the result that the vast majority of "only" children are more intelligent, as a group, than children of larger families.

"Only" children, because of their close association with adults, are frequently ahead of their age mates in the number of words which they know and can use, and in reading ability. If the "only's" superiority is due more to association with adults than to native intelligence, he will find before long that he cannot keep up. Even if he has superior intelligence, he may be too immature physically and socially to mix well with other children. Then he may seek recognition by devoting himself to his studies (10:83).

The good adjustment which most "onlies" achieve seems to be due in no small measure to the very fact that they grow up sure of their parent's love. The "only" child, just because he has no brothers or sisters who might be loved more than he is, is in a secure position. Since he has no younger sibling to push him or older sibling to pull him into independence,

he may retain the habit of looking to his mother for help in many things which he should be doing for himself. The longer he remains dependent, the more chance there is that he will dislike doing things for himself when he finally does start to school. However, the child who has attended nursery school or kindergarten has some of the same advantages as if he had been brought up with siblings. He already knows how to stand up for himself in case of need, and how to yield when he must.

III. REVIEW OF STUDIES

There is very little in the way of statistics to show that a child's position in the family affects his reading ability. The statistics that are available indicate that in general there are no great, consistent differences between oldest, middle, youngest, and "only" children as far as academic achievement is concerned. The importance of the individual's ordinal position in the family is not the position itself, but the attitudes created by the parents as well as the effect upon relationships between the children themselves (5:108).

A boy or girl who is too dependent to strike out and do something on his own, because his efforts to assert himself have been held down at home, is pretty sure to find difficulty in learning. To learn to read or spell takes self-confidence and drive, as well as imagination and intelligence. The first ordinal position child may have had his

ability to assert himself repressed by being dethroned. His self-confidence is stifled. He becomes afraid that he is not loved and a child cannot learn if he is troubled by fears. It takes courage for a youngster to use his mind vigorously, for this is in a sense asserting himself. Self-assertion is the very thing that looks dangerous because it may have led to failure or disapproval before.

Once he has discovered that difficulties can be overcome, he is ready for the next step, "It is safe to try." The child who has been encouraged to take part in the family life, who knows that they have helped and loved him, more readily becomes a problem solver, and learning to read is an easier task.

In our competitive society, the desire of each child to find his place within the group meets with sharp challenges from his siblings. This occurs almost regularly between the first and second child. The first child tries to maintain his superiority of size and age, which the younger one constantly challenges. This competition has a deep impact on each child, leading to the development of opposite character traits, abilities and interests as each seeks success where the other one fails. This explains why in most families the first and second child are so different (12:10).

In order to discover what some of the differences in experiences of first ordinal position and second ordinal position children might be, Dean (11) used twenty pairs of

children. In every case there were only these two children in the family and they were of the same sex. All of the children were under seven years of age and included eight pairs of boys and twelve pairs of girls. This study was made to test personality and was conducted by having the mothers make comparisons on a large number of items.

The differences suggested that the two ordinal positions in the family were in all likelihood accompanied by certain uniformities of experience that molded the personalities into what might be called "first ordinal position role type" and "second ordinal position role type."

The "first ordinal position" child was judged by his mother to be more dependent, more worried, more excitable, to spend more time "just thinking," to be less demonstratively affectionate, to have his feelings hurt more easily, and to be less effective in protecting himself from verbal or physical attack.

A study of behavior traits of 350 kindergarten children based on teacher's ratings was conducted by Goodenough and Leahy (16:45). The results indicated that the oldest children were lacking in aggressiveness, low in self-esteem, lacking leadership, very gullible, somewhat more likely than the others to be seclusive and tended to be of the "introverted" attention type. Middle children showed some lack of aggression, craved physical affection, and were gregarious, but extreme unpopularity was more common among

them than among any of the others. The youngest group was the most homogeneous and presented no peculiarities. The "only" child showed a tendency to be aggressive and self-confident. They were highly gregarious, unstable of mood and excitable.

Thurstone and Jenkins (42:5) studied first and second-born children of 382 families examined by the Institute of Juvenile Research at the University of Chicago. The mean intelligence quotient of the first-born children was 81.75, while in the second-born it was 84.84. This shows a slight advantage for the second-born.

If the intelligence of children is improved by the experience of parents in bringing up children, then it is conceivable that such experience would affect the comparison of the intelligence of first and second-born children. This comparison would, of course, be favorable to the second-born child.

Statistics from the same source showed that, on the whole, later-born siblings tend to be brighter than the first-born. The rise in intelligence with order of birth seems to continue as far as the eighth-born child. This would support medical findings which generally indicate that the first-born child in a family is more likely to be handicapped than the later-born children. The results would indicate that the I.Q. of successive children in the same family are not only unfavorable to the first-born children

particularly, but the mean intelligence rises with order of birth.

Willis (46:375), as reported by Thurstone, made statistical comparisons of the I.Q. of 219 pairs of first and second-born children in the Alex Taylor School, Edmonton, Canada. Each pair were siblings. He calculated there were 9,999 chances in 10,000 that the medial differences of intelligence quotients lies between +1.02 and +7.98 and concluded that first-born children are, on the average, slightly lower in intelligence than second-born children.

Commins (8:488), in an effort to determine the intelligence of the later-born, compared the scores obtained on the McCall Multi-Mental test by 142 pairs of siblings in school grades 3 to 8. It was found that the younger sibling had the higher I.Q. in 99 cases, and that the older sibling had the higher I.Q. in 43 cases. The median difference in I.Q. between the younger sibling who had the higher I.Q. and their brethern was 10.3 points; whereas the median difference between the younger sibling who had the higher I.Q. and their brethern was 7 points. Thus, he concluded that the younger sibling not only surpassed their brothers and sisters in a greater number of cases, but they also surpassed them to a greater extent in I.Q. points than the difference that existed in favor of the older members of the family when they were found to be superior. The youngest children in a family are apparently more intelligent.

Over a three-year period, Arthur (2:541) gave Kuhlman Binet test to 92 pairs of siblings with Finn, Russian or South European surnames when they had completed one year of kindergarten. All of the children had little or no knowledge of English upon entering. The average I.Q. for older siblings was 93.05 with a standard deviation of 11.29. For younger siblings, the average I.Q. was 99.14 with a standard deviation of 10.42. The difference was large enough to be significant.

Arthur also scored 271 pairs of siblings which included the 92 pairs described above. Another 179 pairs were included in which the older had the advantage of one or more additional years training in English. The younger were in kindergarten; the older in grade school. The average I.Q. for older siblings was 89.3 and for younger siblings, 96.9. Instead of eliminating the difference, the inclusion of cases with a greater amount of school training tends to emphasize the contrast.

In an attempt to eliminate the possibility of the older sibling coaching the younger, 36 pairs were tested with the younger sibling being tested first. Of these, the older sibling had an average I.Q. of 84.08 and the younger sibling, 94.7.

The findings of Arthur were substantiated by McFadden (28:86) who tested subjects of the state of North Carolina. All were of native stock which is extremely homogeneous with

a marked absence of foreign population. He obtained evidence of the superiority of the later-born over the earlier-born.

Thurstone (42) gave accounts of several other studies which provide a variety of findings. Yoder (47:134), in studying a small series of great men found that 24 were older as compared to 13 in the younger half of the sibship. Ellis (13), in a study of British geniuses, shows a slightly greater frequency of geniuses in the position of first-born than in the position of last-born (97:67).

From the findings of unpublished researches, Thurstone (42:94) states that the oldest child was most frequently represented in Who's Who, the youngest child next most frequently represented, and the middle child least frequently. However, it is possible that more care and attention is paid to the first-born and perhaps more money is spent on his education (40:8).

From a study made by Cattell (7:803), it appears that the first-born child is more likely to become a scientific man. These were his findings concerning families of which one member was a scientific man.

> In families of two or more children, 284 were first-born and only 168 were second-born; in families of three or more 214 were first-born and 114 were third-born; in families of four or more, 159 were first-born and 81 were fourth-born. Not until the eleventh-born position did the second-born child out-number the first-born.
>
> In so far as it may, in fact, be the case that the first-born child is more likely to be a scientific man, this probably is due to social rather than to physiological causes.

Terman (41:121) made a study of child geniuses and compared his findings with those from the Cattell (7) study. In each case nearly three-fifths were first-born.

Gini (15:37) has shown that first-born individuals predominate among professors in Italian universities. Questionnaires were sent to professors and 445 replies were received of which 416 related to families of two or more. Of those with siblings, 141 were first-born; 82 were second-born; 58 were third-born; 45 were fourth-born; 32 were fifth-born; 31 were sixth or seventh-born; 20 were eighth or ninth-born; and only 7 ranked tenth or greater in birth order.

According to Hodges and Balow (20:41), "A tenable hypothesis would be that first-born children tend to be in a more psychologically stressful situation and, therefore, would demonstrate more learning disabilities than their younger siblings."

In an attempt to find proof, they studied 261 subjects, each of which had one sibling. The subjects were referrals to the Psychological-Education Clinic of the University of Minnesota, College of Education. Reading disabilities were found to account for about 80 per cent of the total case load. They found that no significant differences existed between the ordinal position of the sibling and the subject experiencing learning difficulties. The authors concluded that from the results of the study, it seemed doubtful that ordinal position was related to school learning difficulties.

Kalhorn (25:265) studied 39 pairs of siblings, first and second-born respectively, age range from 30 months to 12 years. They were tested at regular intervals on alternate forms of Stanford-Binet. Seventy-five per cent had five or more tests administered at the same chronological age.

Comparisons were made to determine whether there was a tendency for the older child to pass, whereas his sibling, tested subsequently, failed and vice versa. The results showed a significant difference in the performance of siblings on a variety of Binet tests. Older siblings tended to excel on rather abstract items; younger children revealed superiority on a numerically greater number of items, and particularly on those involving realistic performance tasks; however, the younger of the two children tended to surpass their siblings on total I.Q.

This author concluded that first-born children tend to perform intellectually in a manner different from the next younger child. It may be supposed that an important factor is the intellectual stimulation and companionship received by the first child who is surrounded by adults.

Among the environmental factors which influence reading may be mentioned foreign language, broken school attendance, literacy and economic position of parents, and possibly ordinal position of the child among the siblings of the family. Anderson and Kelley (1) found no significant differences

between the good and poor readers with regard to any of the foregoing factors except ordinal position of the child among siblings. Five per cent of the poor readers were "onlies" as compared with 17 per cent of the good readers. Thirty-four per cent of the poor readers were youngest children as compared with 26 per cent of the good readers. The influence of ordinal position may be an environmental factor in that the only or oldest children probably receive a greater amount of stimulation and extra school help from their parents during their first years at school than do the later-born children.

As may be observed from these studies, the writers are in general agreement that second and later-born children tend to possess slightly greater intelligence than do their first-born siblings. This trend was noted to continue at least until the eighth-born position.

Nevertheless, the studies conducted to determine the ordinal position of geniuses, Italian university professors, scientists and individuals mentioned in Who's Who tend to show that those who surpass in these endeavors are most often first-born. Several theories were proposed as to the reasons why this tendency exists.

The writers whose research included school learning difficulties failed to agree that they were related to the ordinal position of children in the family.

CHAPTER III

COLLECTION OF THE DATA

At the end of the 1964 school year, all of the principals in Yakima were required to make a detailed report to the Superintendent's office regarding every third grade in his school.

Since the data required for this researcher's study was included in their report, it was felt to be unnecessary and unfair to again solicit this information from the grade school administrators. Therefore, permission was sought and granted from the Superintendent of School District #7, Yakima, Washington to use the data that had been secured.

A card was prepared for each of the 907 third graders enrolled at the time the survey was made. However, the cards of some subjects were rejected for use in this study due to lack of data on one of the necessary criteria.

Due to the nature of employment in the highly agricultural Yakima area, many families move to this valley in late spring. Children of these families were not present when all of the tests were given. This is believed to account for many of the incomplete cards. However, it is not thought to have affected the final results as the number of rejected subjects was not disproportionately large in the areas in which lower income families reside. Illness at the time tests were given was another reason for disqualification due to incomplete data.

The final number of cards which were valid was 701 and the following data was excerpted from the total information concerning each of these children.

The child's verbal, non-verbal, and total intelligence scores as measured by the Lorge-Thorndike test. The intelligence scores were then placed in an appropriate category from one of the following:

a. Below 90

b. 90-110

c. 111-130

d. Above 130

The child's reading achievement scores, comprised of vocabulary and reading comprehension, as measured by the third grade Iowa Basic Skills Test. The reading achievement scores were then placed in appropriate grade level categories. The categories employed in this study were:

a. 1.0-1.4

b. 1.5-1.9

c. 2.0-2.4

d. 2.5-2.9

e. 3.0-3.4

f. 3.5 and above

The child's ordinal position in the family was determined on the basis of the following ordinal position categories:

a. The oldest child

b. A middle child in any family of three or more

c. The youngest child

d. The "only" child

It is recognized that though a child's intelligence is one of the strongest contributory factors to his reading ability, this study is limited to this one factor and does not consider any of the following factors:

a. Physical fitness

b. Chronological age

c. Cultural background of the family

d. Home and community experiences

e. Social experiences

f. Emotional development

g. Language ability

h. Kindergarten experience

It is also acknowledged that neither the I.Q. scores nor the reading achievement scores are infallible. The administering of either of these tests on another occasion might conceivably alter the score of any individual.

However, since I.Q. is one of the most important factors, it was on this basis that this group of children was divided. The I.Q., or intelligence quotient, is determined by dividing the mental age by the chronological age of the child. Mental age is ascertained by the administering of a standardized test for this purpose. In this case, the

tests were teacher administered. Wechsler's (44:42) WAIS classification of I.Q.s was used in determining the I.Q. category only. This, however, is not the test administered to the subjects of this study.

CHAPTER IV

ANALYSIS OF THE DATA

Yakima has provided a special education program for children whose I.Q.s range below 79. Therefore, the category labeled under 90 I.Q. consists of those who scored from 79-90. There were 111 children in this group; 18 were oldest children, 66 were middle, 24 were youngest, and 3 were "only" children.

In all of the tables in this chapter, the t-test was applied to determine the possibility of statistical significance at the .01 level of confidence.

Table I, located on page 33, shows the comparison of mean vocabulary scores of each ordinal position group with all other possible ordinal groups for children with an I.Q. under 90.

As noted from Table I, the obtained t's for the comparison of mean vocabulary score were not statistically significant between any of the ordinal position groups. Although there were no statistical significant differences, it should be noted that for this I.Q. group the oldest children's mean vocabulary score excelled the mean score of the other three ordinal position groups. The "only" children excelled the middle and youngest groups, while the youngest children excelled the middle children. Therefore, it may be stated that for measured vocabulary in this I.Q.

TABLE I

COMPARISON OF MEAN DIFFERENCES FOR VOCABULARY: ALL ORDINAL POSITION GROUPS WITH I.Q. UNDER 90

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	18	2.81	.80	.21	1.00	2.64
Middle	66	2.60	.67			
Oldest	18	2.81	.80	.23	.04	2.71
Youngest	24	2.64	.63			
Oldest	18	2.81	.80	.21	.29	2.84
Only	3	2.75	.13			
Middle	66	2.60	.67	.16	.003	2.63
Youngest	24	2.64	.63			
Middle	66	2.60	.67	.12	1.25	2.65
Only	3	2.75	.13			
Youngest	24	2.64	.63	.15	.73	2.77
Only	3	2.75	.13			

group, the oldest children excel all other children in the group, followed by the "only" children, the youngest children, and the middle children in that order.

The same 111 children with an I.Q. under 90 were scored on comprehension of reading. Table II, located on page 35, indicates the comparisons of mean comprehension score between all of the ordinal position groups.

It may be observed from Table II that the obtained t's for the comparisons of mean comprehension score were not statistically significant between any of the ordinal position groups. However, it should be noted that the oldest children's mean comprehension score surpassed the mean score of the other three ordinal position groups. The youngest children scored slightly higher than the "only" children, and the middle children scored the lowest of any of the four groups. For measured comprehension in this I.Q. category, it may, then, be stated that the oldest children excel all other children, followed in order by the youngest, "only," and middle children.

The second I.Q. group consists of children who scored at least 90, but not above 110. This group is considered to be the average group and, according to Wechsler (44:42), 50 per cent of the population is included in this category. As would be expected, this is the largest group. It consisted of 345 children; 84 were oldest children, 126 middle, 121 youngest, and 14 were "only" children.

TABLE II

COMPARISON OF MEAN DIFFERENCES FOR COMPREHENSION: ALL ORDINAL POSITION GROUPS WITH I.Q. UNDER 90

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	18	2.92	.63	.18	2.11	2.64
Middle	66	2.54	.79			
Oldest	18	2.92	.63	.13	1.15	2.71
Youngest	24	2.77	.62			
Oldest	18	2.92	.63	.09	1.90	2.84
Only	3	2.75	.13			
Middle	66	2.54	.79	.16	1.43	2.63
Youngest	24	2.77	.62			
Middle	66	2.54	.79	.13	1.61	2.65
Only	3	2.75	.13			
Youngest	24	2.77	.62	.15	.13	2.77
Only	3	2.75	.13			

Table III, located on page 37, shows the result of the t-test in the comparisons of mean vocabulary score of each ordinal position group with all other possible ordinal groups for children whose I.Q. is at least 90 but does not exceed 110.

Although there were no statistically significant differences, it should be noted from Table III that the "only" children's mean vocabulary score excelled the mean score of the children of all other ordinal position groups for this I.Q. category. The youngest children excelled the oldest by a very slight margin, and all of the other groups excelled the middle children. It may be noted, then, that the excellence of scores is ranked in this order: "only," youngest, oldest, and middle children.

In Table IV, located on page 38, is shown the results of the comparisons of the mean reading comprehension score for the same 345 children as those used for Table III.

A study of Table IV will reveal that the obtained t's were not statistically significant for mean reading comprehension scores between any of the ordinal position group comparisons. However, it may be noted that the mean comprehension scores of the "only" children exceeded the mean score of all other ordinal position groups, although the difference was not great enough to be of significance statistically. The oldest children achieved scores higher than those of the youngest children, while the scores of

TABLE III

COMPARISON OF MEAN DIFFERENCES FOR VOCABULARY: ALL ORDINAL POSITION GROUPS WITH I.Q. OF 90-110

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	84	3.07	.75	.10	1.20	2.60
Middle	126	2.95	.74			
Oldest	84	3.07	.75	.10	.20	2.60
Youngest	121	3.09	.69			
Oldest	84	3.07	.75	.20	.75	2.63
Only	14	3.22	.67			
Middle	126	2.95	.74	.09	1.60	2.60
Youngest	121	3.09	.69			
Middle	126	2.95	.74	.19	1.40	2.62
Only	14	3.22	.67			
Youngest	121	3.09	.69	.19	.68	2.62
Only	14	3.22	.67			

TABLE IV

COMPARISON OF MEAN DIFFERENCES FOR COMPREHENSION: ALL ORDINAL POSITION GROUPS WITH AN I.Q. OF 90-110

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	84	3.04	.70	.10	.70	2.60
Middle	126	2.97	.69			
Oldest	84	3.04	.70	.10	.30	2.60
Youngest	121	3.01	.71			
Oldest	84	3.04	.70	.19	.58	2.63
Only	14	3.15	.66			
Middle	126	2.97	.69	.09	.44	2.60
Youngest	121	3.01	.71			
Middle	126	2.97	.69	.19	.95	2.62
Only	14	3.15	.66			
Youngest	121	3.01	.71	.19	.74	2.62
Only	14	3.15	.66			

children in all positions exceeded those earned by the middle children. Therefore, it may be stated, that, for measured comprehension in this I.Q. group, children's scores would be ranked in this order: "only," oldest, youngest, and middle children.

Those individuals with an I.Q. ranging from 111-130 are described by Wechsler (44:42) as bright-normal and superior. Twenty-two and eight-tenths per cent of the entire population are included in this classification. There were 227 Yakima third graders in this group; 52 were oldest, 84 middle, 77 youngest, and 14 were "only" children.

In Table V, located on page 40, is shown the comparison of mean vocabulary scores of children with an I.Q. ranging from 111-130. The scores of each ordinal position group are compared with each of the other three groups.

As noted from Table V, the obtained t's for the comparisons of mean vocabulary score were not statistically significant. However, it should also be noted, that for this I.Q. group, the oldest children's mean vocabulary score surpassed the mean score of the children in all other ordinal position groups. The children who ranked next were those who were youngest; closely followed by the "onlies." The mean vocabulary score of the middle children were the lowest. Therefore, the order of ranking for measured vocabulary for children with an I.Q. of 111-130 would be: oldest, youngest, "onlies," and middle children.

TABLE V

COMPARISON OF MEAN DIFFERENCES FOR VOCABULARY: ALL ORDINAL POSITION GROUPS WITH I.Q. OF 111-130

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	52	3.42	.62	.11	1.40	2.62
Middle	84	3.27	.73			
Oldest	52	3.42	.62	.10	.40	2.62
Youngest	77	3.38	.56			
Oldest	52	3.42	.62	.22	.27	2.66
Only	14	3.36	.74			
Middle	84	3.27	.73	.10	1.10	2.61
Youngest	77	3.38	.56			
Middle	84	3.27	.73	.21	.43	2.63
Only	14	3.36	.74			
Youngest	77	3.38	.56	.21	.09	2.63
Only	14	3.36	.74			

Table VI, located on page 42, shows the t-test results of the comparison of reading comprehension scores between all of the ordinal position groups with an I.Q. of 111-130.

It may be noted from Table VI that the obtained t's for the comparisons of mean comprehension score between any of the ordinal groups were statistically insignificant. Although the difference is not great enough to be of significance statistically, it should be noted that the mean comprehension scores of the oldest children rated above those of the children in the other three ordinal positions. The scores of the youngest and "only" children were nearly identical with that of the youngest being .01 the greater. The mean scores of all of the other groups were higher than those of the middle children. Therefore, it may be stated that for measured comprehension in this I.Q. group, the oldest children excel, followed by the youngest, "only," and middle children.

Wechsler (44:42) describes those individuals who score above 130 on an I.Q. test as being very superior. Usually, approximately 2.2 per cent of the population comprises this category. However, 33 or 4.7 per cent of the children included in this study were in this I.Q. area.

Table VII, shown on page 43, gives the comparisons of the mean vocabulary score between all of the ordinal position groups for those individuals with an I.Q. above 130.

TABLE VI

COMPARISON OF MEAN DIFFERENCES FOR COMPREHENSION: ALL ORDINAL POSITION GROUPS WITH I.Q. OF 111-130

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	52	3.50	.40	.09	2.40	2.62
Middle	84	3.28	.67			
Oldest	52	3.50	.40	.08	1.60	2.62
Youngest	77	3.37	.55			
Oldest	52	3.50	.40	.18	.77	2.66
Only	14	3.36	.66			
Middle	84	3.28	.67	.09	1.00	2.61
Youngest	77	3.37	.55			
Middle	84	3.28	.67	.19	.42	2.63
Only	14	3.36	.66			
Youngest	77	3.37	.55	.19	.05	2.63
Only	14	3.36	.66			

TABLE VII

COMPARISON OF MEAN DIFFERENCES FOR VOCABULARY: ALL ORDINAL POSITION GROUPS WITH I.Q. ABOVE 130

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	7	3.47	.70	.29	.41	3.17
Middle	3	3.59	.23			
Oldest	7	3.47	.70	.26	1.00	3.01
Youngest	6	3.75	.00			
Oldest	7	3.47	.70	.26	1.00	3.25
Only	2	3.75	.00			
Middle	3	3.59	.23	.13	1.20	3.25
Youngest	6	3.75	.00			
Middle	3	3.59	.23	.13	1.20	4.03
Only	2	3.75	.00			
Youngest	6	3.75	.00	.00	.00	3.36
Only	2	3.75	.00			

It may be noted from Table VII that the obtained t's for mean vocabulary score between any of the ordinal position groups were not statistically significant. Since no provision was made for mean scores above the 3.75 grade placement, it might be expected that any or all of the children included in the superior I.Q. group could attain that score. This was the mean vocabulary score attained by both the "only" and youngest children. This test was the one and only instance of the entire study in which the middle children excelled any of the other groups. In this case, the mean vocabulary score of the middle children ranked third and that of the oldest children ranked the lowest.

In Table VIII, located on page 45, is shown the comparisons of the mean comprehension score of each of the ordinal positions with all other groups for children with an I.Q. above 130.

The figures in Table VIII indicate that the obtained t-scores for the comparisons of mean comprehension were not statistically significant between any of the ordinal position groups. However, as was true of the mean vocabulary score, the "only" and the youngest children again scored the maximum of 3.75 grade placement. Their score was followed by that of the oldest children, while the middle children ranked the lowest.

Table IX, located on page 47, presents the comparisons of the mean vocabulary score of each of the ordinal

TABLE VIII

COMPARISON OF MEAN DIFFERENCES FOR COMPREHENSION: ALL ORDINAL POSITION GROUPS WITH I.Q. ABOVE 130

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	7	3.61	.36	.30	.63	3.17
Middle	3	3.42	.48			
Oldest	7	3.61	.36	.13	1.00	3.01
Youngest	6	3.75	.00			
Oldest	7	3.61	.36	.13	1.00	3.25
Only	2	3.75	.00			
Middle	3	3.42	.48	.27	1.20	3.25
Youngest	6	3.75	.00			
Middle	3	3.42	.48	.27	1.20	4.03
Only	2	3.75	.00			
Youngest	6	3.75	.00	.00	.00	3.36
Only	2	3.75	.00			

position groups for the total number of children used in this study, regardless of I.Q.

As indicated in Table IX, the obtained t's for the comparisons of mean vocabulary score were statistically significant in two of the six possible comparisons. A significance was noted between the comparison of the middle and oldest groups and again when the middle position group was compared to the youngest group of children. It should also be noted that the mean vocabulary score of the "only" children exceeded the mean score of the other three ordinal position groups. The oldest children excelled the youngest children by .01. However, there was a wide spread between the youngest and the middle children. Therefore, it may be seen that for measured vocabulary, regardless of I.Q., the "only" children excel all other children, followed by the oldest, youngest, and middle children in that order.

The mean comprehension scores of the entire number of children included in this study are compared between all possible ordinal position groups in Table X, shown on page 48. The I.Q. of the individual was completely disregarded in this comparison.

It may be noted in Table X, that the obtained t's for the comparison of mean vocabulary scores were statistically significant in three of the six comparisons of ordinal position groups. In each of these instances the "only" child was compared with each of the three other possible positions.

TABLE IX

COMPARISON OF MEAN DIFFERENCES FOR VOCABULARY: ALL ORDINAL POSITION GROUPS REGARDLESS OF I.Q.

Group	N	Obtained Means	σm	σDm	Obtained t	Required t
Oldest	161	3.17	.74	.07	2.85	2.59*
Middle	279	2.97	.76			
Oldest	161	3.17	.74	.07	.14	2.59
Youngest	228	3.16	.68			
Oldest	161	3.17	.74	.13	.77	2.61
Only	33	3.27	.69			
Middle	279	2.97	.76	.06	3.16	2.59*
Youngest	228	3.16	.68			
Middle	279	2.97	.76	.13	2.30	2.59
Only	33	3.27	.69			
Youngest	228	3.16	.68	.13	.85	2.60
Only	33	3.27	.69			

*Significant at the .01 level of confidence

TABLE X

COMPARISON OF MEAN DIFFERENCES FOR COMPREHENSION: ALL ORDINAL POSITION GROUPS REGARDLESS OF I.Q.

Group	N	Obtained Means	σ_m	σ_{Dm}	Obtained t	Required t
Oldest	161	3.11	.73	.07	2.00	2.59
Middle	279	2.97	.77			
Oldest	161	3.11	.73	.07	.57	2.59
Youngest	228	3.07	.73			
Oldest	161	3.11	.73	.13	4.00	2.61*
Only	33	3.63	.71			
Middle	279	2.97	.77	.06	1.66	2.59
Youngest	228	3.07	.73			
Middle	279	2.97	.77	.13	5.07	2.59*
Only	33	3.63	.71			
Youngest	228	3.07	.73	.13	4.30	2.60*
Only	33	3.63	.71			

*Significant at the .01 level of confidence

It should also be noted that the "only" children's mean comprehension score excelled that of children in any other ordinal position. The difference between their score and the next position, that of oldest, was very great. The oldest children excelled the youngest while the youngest excelled the middle. However, the differences were not great. Therefore, it may be stated that for measured comprehension, irregardless of I.Q., the mean scores are ranked in this order: "only," oldest, youngest, and middle children.

CHAPTER V

SUMMARY AND CONCLUSIONS

The vocabulary and reading comprehension scores of 701 third graders were compared according to four ordinal position groups: the "only" child, the oldest child, the middle child, and the youngest child. Each of the ordinal position groups was divided into ability groups as indicated by the intelligence quotients of the subjects. A further comparison was made of all of the subjects in which the I.Q. was disregarded.

On the basis of the findings of this study, the hypothesis that there will be no statistically significant differentiation in reading scores brought about by the child's ordinal position in the family, when intelligence groups are considered, may be accepted. Since siblings have an I.Q. not unlike each other, it may be assumed that the I.Q. of the individual should be considered when an attempt is made to discover if one position in the family is academically more favorable than another.

When considering the subjects in I.Q. groups, there was not one instance in which the mean scores of one ordinal position group was significantly different from those of any other group.

In the comparisons of the total number of children scored on vocabulary tests, regardless of I.Q. groups,

there was found to be statistically significant differences between the oldest and middle children and between the youngest and middle children. For reading comprehension scores for the entire number of subjects, regardless of I.Q., the comparisons of the "only" child with each of the other three ordinal position groups were found to be statistically significant. These findings, however, do not alter the acceptance of the hypothesis since it was stated that I.Q. classifications were to be considered.

Throughout this study, some significant trends were noted. Table XI, located on page 52, shows the order of ranking of each of the four ordinal position groups for every I.Q. group classification, and for the total number of children.

As may be noted from Table XI, the oldest children ranked in first place in four of the divisions while the "only" children held that place also in four divisions and shared it with the youngest children on two other occasions.

Therefore, it appears that the "only" children tend to attain the highest scores more frequently than children of any other ordinal position.

The oldest children ranked in second place in four divisions, whereas, the "only" children held that position in one instance. The second place rating was held by the youngest children in four of the tests.

TABLE XI

ORDINAL POSITION PLACEMENT AS INDICATED IN TABLES I TO X

I.Q. Under 90

Table I

Group	N	Mean Score
Oldest	18	2.81
Only	3	2.75
Youngest	24	2.64
Middle	66	2.60

Table II

Group	N	Mean Score
Oldest	18	2.92
Youngest	24	2.77
Only	3	2.75
Middle	66	2.54

I.Q. 90-110

Table III

Group	N	Mean Score
Only	14	3.22
Youngest	121	3.09
Oldest	84	3.07
Middle	126	2.95

Table IV

Group	N	Mean Score
Only	14	3.15
Oldest	84	3.04
Youngest	121	3.01
Middle	126	2.97

I.Q. 111-130

Table V

Group	N	Mean Score
Oldest	52	3.42
Youngest	77	3.38
Only	14	3.36
Middle	84	3.27

Table VI

Group	N	Mean Score
Oldest	52	3.50
Youngest	77	3.37
Only	14	3.36
Middle	84	3.28

I.Q. Above 130

Table VII

Group	N	Mean Score
Only	2	3.75
Youngest	6	3.75
Middle	3	3.59
Oldest	7	3.47

Table VIII

Group	N	Mean Score
Youngest	6	3.75
Only	2	3.75
Oldest	7	3.61
Middle	3	3.42

I.Q. Disregarded

Table IX

Group	N	Mean Score
Only	33	3.27
Oldest	161	3.17
Youngest	228	3.16
Middle	279	2.97

Table X

Group	N	Mean Score
Only	33	3.63
Oldest	161	3.11
Youngest	228	3.07
Middle	279	2.97

The third place position was held by the oldest children in two of the I.Q. divisions, by the "onlies" three times, by the youngest four times, and by the middle children on one occasion. This was the only position, other than fourth place, which the middle children held. For the test in which the middle children ranked third, the oldest children place in the lowest position.

Therefore, it appears that the middle children tend to achieve lower on reading vocabulary and comprehension tests than do children in the other three ordinal position groups.

The average of the mean scores was computed in an attempt to determine an over-all ranking of the four ordinal position groups. This was done on the basis of I.Q. groups and again on the basis of including the total number of subjects tested. The first given average mean score is for the division by I.Q. groups; the second average mean score is for the total number of children, irregardless of I.Q.

Group	N	By I.Q. Groups	Total Sample
Only	33	3.30	3.26
Oldest	161	3.21	3.23
Youngest	228	3.20	3.22
Middle	279	3.06	3.08

As may be noted from the results, the relative ranking of the ordinal position groups remained unchanged whether I.Q. groups were considered or disregarded.

Therefore, it may be stated that the scores of the "only" children exceeded those of children of any other position, while the scores of the oldest and youngest children were nearly identical. The scores obtained by the middle children were decidedly below those of children of any other ordinal position.

The tendency of the middle child to score in the lowest position in the majority of the tests as well as the lowest average mean score, should be especially noted. Parents or teachers could possibly provide the experiences which are lacking in these children to allow them to perform equally well as the children in other ordinal positions.

Among those who have written on the subject, there is general agreement that there is a rise of intelligence in later-born children. If there were no compensating factors, the results of this research should have shown the youngest children consistently excelling in scores.

Fortunately, for the well-being of all children, parents, and teachers, this was not indicated. The differences of mean test scores in various I.Q. groups were not great enough to "earmark" each child's chance of success by his birth position. What, then, can be considered the main components which balance the learning scale to give every child a substantial opportunity for success regardless of his order of birth?

Need for further study. Many questions related to this study were of interest to this writer. Further needed studies in these areas could be the keys to unlock doors now blocking the learning processes of some children.

Does the "only" child tend to make the highest score because of having been raised with adults only?

Does the advantage of learning from older siblings tend to produce higher scores for the youngest child?

Does the oldest child score lower than the "only" child because of the insecurity he developed when he was dethroned as the "only" child?

What effect will other variables such as sex of the child, size of the family or age differences of siblings have on a study of ordinal position?

As the pattern of family life changes, it would seem advisable that an occasional study of this type should be conducted in an effort to determine whether favorable results were being obtained. Since a greater number of early marriages are taking place, with a resultant higher divorce rate, and with a yearly increase in the number of mothers being employed outside the home, it may be concluded that there will be a larger percentage of children being reared by one parent, by stepparents or by baby sitters. These conditions could conceivably alter the attitudes and feelings of children, concerning their ordinal position in the family, in a detrimental manner.

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