THE INFLUENCE OF CHRONOLOGICAL AGE VERSUS MENTAL AGE ON THE PLAY ACTIVITIES OF BOYS.

BY

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Instructor in Charge.

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Head or Chairman of Department.
ACKNOWLEDGEMENTS.

The writer wishes to express appreciation to The Department of Educational Research of the Kansas City, Missouri Schools for supplying mental age data for the boys used in this study, and also to M.M. Harvey C. Lehman and Paul A. Witty for supplying Play Quiz data and for helpful suggestions during the course of the investigation.
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THE INFLUENCE OF CHRONOLOGICAL AGE VERSUS MENTAL AGE ON THE PLAY ACTIVITIES OF BOYS.

I.

GENERAL STATEMENT OF PROBLEM

Educators agree generally that adequate play habits constitute an important factor in the proper development of the child. This being so, any device which tends to disrupt the normality of a child's play life is considered vicious. Thus it is that the acceleration of bright children in school has met with strenuous opposition from those educators who maintain that the chronological age level of accelerated children, being lower than that of their associates, tends to make them mal-adjusted socially. Other educators, however, champion acceleration, saying that correspondence of mental age level is of more importance in making for normal
social adjustments than is correspondence of chronological age level.

This problem is of considerable significance to education, particularly because of its implications for the treatment of gifted children. Its solution hinges largely on the answer to the question: Which is the more influential factor in determining the character of children's play activities, chronological age or mental age? The purpose of this study will be to suggest an answer to this question.
II.

SPECIFIC SCOPE OF THE STUDY DEFINED.

There are, from one point of view, four major aspects of play which should be of significance in any study of children's play activities: its duration, quality, versatility, and social character. As yet, the quality of children's play activities and the time they consume are not very readily amenable to measurement where a large number of cases are involved. The scope of this study, then, will be to determine in so far as possible the comparative influence of mental age and chronological age on the versatility and social character of boys' play activities.
The writer has been able to find in related literature only two scientific studies which contribute directly towards the problem of this investigation. There has been set forth regarding the general problem, however, considerable opinion, some of which may be of significance here. 

Freeman states: "Another objection which may be made to acceleration as a means of adjustment is that it will bring into association pupils of different physiological ages and hence different degrees of social maturity. Our knowledge of the relation between social maturity and physiological age is meagre, and it is not certain that social adjustments are not in considerable measure related to intellectual development as well as to physical development."

Holmes believes that "To select certain children for rapid advancement and to push them ahead of their fellows is not necessarily good for them, for the group they leave, or for the group they join." He insists that "No shortsighted view of what individual development means should lead us to

*Reference numbers within the body of this thesis refer to studies listed in the bibliography.*
separate a bright child from his companions with whom he can be happiest and from whom he can learn most through common work and play."

Klapper holds that "The junior high-school graduate of eleven is a mal-adjusted child. Child life is more than mere school study. The eleven-year-old graduates cannot play with children eleven years old, nor can they play safely with those fourteen-year-old children who are their mental equals. The high-school senior of fourteen finds few friends among his classmates of seventeen. He is decidedly a mal-adjusted adolescent and the school has unwittingly become a party to producing his problem."

Terman and De Voss, after having analyzed considerable material regarding the play activities, character traits, and educational attainments of gifted children, insist that "Surely there is no good reason why most children of 140 I. Q. or higher should not enter the high school at 12 years and the university at 16. This would allow for an acceleration of approximately three years, for the average age of high school and university entrance is about 15 and 19 years respectively."

Warner, having made a careful study of several boys' gangs, believes that "chronological ages might have some weight in the grouping of boys, but since there are more groups in which the mean variation of the mental ages is less
than the mean variation of the chronological ages, we might conclude that there is a tendency for mental ages to have more weight in the formation of boys' groups than chronological ages."

Her investigation, she says, "is not an attempt to solve the problem in so brief a study of so few cases, but the investigation indicates that mental age is the greatest factor in the selection of one's companions and in holding groups together."  

Witty and Lehman made an intensive study of 50 children of I. Q. 140 and above, each child being paired with a mentally average child of like age, sex, and environment. They found that the gifted group and the control group of children demonstrated the same versatility of interest in play; that is, the mean number of activities participated in by the two groups of children was identical, but the gifted were more solitary in their play than were the average children.

In an unpublished study Miss Edith Lewis secured extensive data regarding the play behavior of over three thousand children of mental ages ranging from 7 1/2 to 18 1/2 and over six thousand children of chronological ages ranging from 7 1/2 to 19 1/2. The mean number of activities engaged in and the mean Index of Social Participation were
calculated for each M.A. and C.A. group. The data seemed to indicate that increase in M.A. has relatively little effect upon the versatility of play interest; that children of widely varying mental ages engage in approximately the same number of activities as do children of the same chronological ages. These data appeared to show, however, that participation in social plays and games decreases more rapidly with increase in M.A. than with increase in C.A.
IV.

METHOD OF INVESTIGATION.

The last two studies quoted in Chapter III suggest possible techniques for approaching the problem of this study. Neither of them, however, is quite adequate for the peculiar purposes of the present investigation. By studying the play behavior of gifted children, those whose mental ages deviated farther from the norm than do their chronological ages, Witty and Lehman were able to ascertain the influence of an increase in mental age without a corresponding increase in chronological age. However, their data will not answer the question: what would be the influence of an increase in chronological age without a corresponding increase in mental age?

There is likewise an objection to the use of Miss Lewis's technique for the purposes of this study. Several considerations cause rather serious doubts to arise regarding the validity of the hypothesis which her data appear to support. Only high school students and elementary school pupils above the third grade were used in her study. This being so, it is probable that there are selected groups with respect to intelligence at each end of the C.A. distribution. The 7 1/2-year-olds in the third grade or above probably represent a degree or intelligence somewhat above normal. Similarly, the
19 1/2-year-olds in high school or below probably represent a degree of intelligence somewhat below normal. No children were used whose M.A.'s. or C.A.'s. were below 7 1/2. Hence the children at the lower end of the C.A. distribution must necessarily be normal or above with respect to intelligence. None could be below normal. Similarly, since no children were used whose M.A.'s. were above 18 1/2 or whose C.A.'s. were above 19 1/2, those children at the upper end of the C.A. distribution must necessarily be normal or below with respect to intelligence. None of them could be above normal. Within the C.A. distribution, however, not considering the two extremes, the children used might be normal, below normal, or above normal with respect to intelligence.

It has been found in several studies that unusually bright children are more solitary in their play activities than are normal or dull children. This being so, and since the children at the lower and upper ends of Miss Lewis's C.A. distribution probably represent respectively bright and dull groups, the differences found between the Indices of Social Participation for these extreme groups may reflect differences in degree of intelligence as well as differences in mental age level. An examination of Miss Lewis's data seem to indicate that this is true. If two age groups on each extreme of her C.A. and M.A. distributions are ignored, there are to be found no significant differences in the trend
of the Index of Social Participation of the C.A. and the M.A. groups.

The method of partial correlation is also a possible technique for the purposes of the present study. However, it too has rather serious limitations. If play data were amassed and the influence of M.A. partialed out, then in a general way the influence of C.A. might be ascertained. Similarly if the influence of C.A. were to be partialed out, in a general way the influence of M.A. might be ascertained. The amassing of data, however, probably would cover up significant facts which could be revealed only by the study of each individual play activity. If several hundred play activities are studied, the labor necessary to calculate partial correlations for each activity is almost prohibitive.

Thus, it seems that the most desirable technique for the purposes of this study is one which calls for the study of normal children only, (i.e. I. Q. 90-110) and which makes possible the analysis of the influence of M.A. and C.A. on the participation of children in each play activity studied. The technique subsequently outlined in this chapter meets both of these criteria.

1. Data regarding the play behavior of over 6000 elementary and secondary school children in Kansas City, Mo. were obtained by means of the Lehman Play Quiz. Each child

*The Quiz was administered and the test sheets scored by MM. H. C. Lehman and P.A. Witty, University of Kansas, and subsequently placed at the disposal of the present writer.
was asked to indicate among a comprehensive and catholic list of 200 play activities only those in which he had engaged during the preceding week just because he wanted to. The children were later asked to designate the activities in which they had participated alone.

2. Using the test sheets for all those boys for whom mental ages were available, three mental age groups centering around each chronological age level and three chronological age groups centering around each mental age level were isolated. Thus, for a given chronological age level, the corresponding mental age group, the mental age group one year below, and the mental age group one year above were isolated. Similarly, for a given mental age level, the corresponding chronological age group, the chronological age group one year below, and the chronological age group one year above were isolated.

It was found that in many of the groups thus isolated there were not enough cases to make comparisons worth while. In six series of groups (3 groups each), however, the number of cases was large enough to make comparisons at least suggestive. The groups thus isolated and used in this study with the frequencies of each group are shown in Table I.

*The mental ages of these boys were determined by individual and group tests as follows: Stanford Revision of the Binet-Simon Tests, National Intelligence Examination, Terman Group Test of Mental Ability.


<table>
<thead>
<tr>
<th>TABLE I.</th>
<th>GROUPS USED IN THE STUDY, WITH THEIR FREQUENCIES.</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.A. VARIANT GROUPS</td>
<td>NORMS</td>
</tr>
<tr>
<td>SERIES A.</td>
<td></td>
</tr>
<tr>
<td>I.</td>
<td>51 boys of</td>
</tr>
<tr>
<td></td>
<td>C.A. 11</td>
</tr>
<tr>
<td></td>
<td>M.A. 12</td>
</tr>
<tr>
<td>SERIES B.</td>
<td></td>
</tr>
<tr>
<td>IV.</td>
<td>20 boys of</td>
</tr>
<tr>
<td></td>
<td>C.A. 12</td>
</tr>
<tr>
<td></td>
<td>M.A. 11</td>
</tr>
<tr>
<td>SERIES C.</td>
<td></td>
</tr>
<tr>
<td>VII.</td>
<td>48 boys of</td>
</tr>
<tr>
<td></td>
<td>C.A. 12</td>
</tr>
<tr>
<td></td>
<td>M.A. 13</td>
</tr>
<tr>
<td>SERIES D.</td>
<td></td>
</tr>
<tr>
<td>X.</td>
<td>19 boys of</td>
</tr>
<tr>
<td></td>
<td>C.A. 13</td>
</tr>
<tr>
<td></td>
<td>M.A. 12</td>
</tr>
<tr>
<td>SERIES E.</td>
<td></td>
</tr>
<tr>
<td>XIII.</td>
<td>29 boys of</td>
</tr>
<tr>
<td></td>
<td>C.A. 13</td>
</tr>
<tr>
<td></td>
<td>M.A. 14</td>
</tr>
<tr>
<td>SERIES F.</td>
<td></td>
</tr>
<tr>
<td>XVI.</td>
<td>22 boys of</td>
</tr>
<tr>
<td></td>
<td>C.A. 14</td>
</tr>
<tr>
<td></td>
<td>M.A. 15</td>
</tr>
</tbody>
</table>

Regarding Table I, it will be seen that the groups are numbered up to eighteen. Nevertheless, there are really only ten different groups presented. (Groups I, II, III, V, VII, IX, XI, XIII, XV, and XVII.) The groups numbered I and VI, III and IV, V and VIII, VII and XII, IX and X, XI and XIV, XIII and XVIII, XV and XVI, are identical. However, it will be noted that no one variant group is to be compared with the same norm more than once.

For example, the 51 boys of Group I are first compared with the 11-year norm (Group II). Then the same boys (as Group VI) are compared with the 12-year norm (Group V). Similarly, the 20 boys of Group III are first compared with the 11-year norm (Group II). Later, as Group IV, they are compared with the 12-year norm (Group V).

It may be seen further that the groups of boys here compared never vary from the normal group by more than one year in M.A. or in C.A. Therefore, their I.Q.'s must range only from about 90 to 110. Thus, according to Terman's classification, they are all normal boys with respect to intelligence.
The treatment of the three groups in SERIES A
(Table I) may be taken to illustrate the technique employed.
Group II is the norm which is used as a standard for making
comparisons. Groups I and III are, respectively, the mental
age variant and the chronological age variant groups, each
of which is compared with Group II.

It will be noticed that the mental age and the
chronological age of the boys in Group II are identical. The
boys of Group I, the mental age variant, have the same chronolo-
gical age as the boys of Group II. They differ from the
boys of Group II only in the fact that mentally they are one
year older. By comparing the play behavior of the boys in
these two groups, I and II, it should be possible to ascertain
the influence of one year's increase in mental age when chrono-
logical age is held constant.

Similarly, it will be noticed that the boys of Group
III, the chronological age variant, have the same mental age
as the boys of Group II, and that they differ from the boys
of Group II only in the fact that chronologically they are one
year older. By comparing the play behavior of the boys in
these two groups, II and III, it should be possible to ascertain
the influence of one year's increase in chronological age when
mental age is held constant.

Having found the influence of one year's increase
in mental age when chronological age is held constant, and the
influence of one year's increase in chronological age when mental age is held constant, it should then be possible, by comparing the deviations of the M.A. and C.A. variant groups from the norm, to determine whether mental age or chronological age effects the greater influence upon the boys' play behavior.

After having ascertained the relative amounts of deviation of Groups I and III, using Group II as the norm, these two variant groups (though numbered respectively as Groups VI and IV) were studied, using Group V as the norm. It will be noticed that the variant groups bear the same relationship to Group V as to Group II; i.e. one of them differs from Group V by one year in M.A. only, and the other differs from Group V by one year in C.A. only.

The other variant groups presented in Table I were treated in a manner similar to that just outlined for Groups I and III (IV & VI).

3. The number of boys of each of the groups who engaged in a given play activity during the week preceding the date of investigation was ascertained and the group percentages for each activity derived. The method used in tabulating frequencies of participation is shown in Table II.

4. Using as norms the percentages of participation in each activity for those groups having identical mental and chronological ages (e.g. Group II, M.A. 11–C.A. 11; Series A, Table I), it was determined to what extent each variant group deviated from the norm on each activity. (Table II.)
### TABLE II.
SAMPLE OF METHOD USED IN TABULATING
PLAY QUIZ DATA FOR EACH GROUP.

<table>
<thead>
<tr>
<th>H.A. VARIANT GROUPS</th>
<th>HOIM GROUPS</th>
<th>C.A. VARIANT GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 boys of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.A. 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.A. 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SERIES A.</strong> II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 boys of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.A. 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.A. 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>III.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 boys of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.A. 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.A. 12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity Frequency cies.</th>
<th>Sum</th>
<th>%</th>
<th>Frequency cies.</th>
<th>Sum</th>
<th>%</th>
<th>Frequency cies.</th>
<th>Sum</th>
<th>%</th>
<th>Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>13</td>
<td>42</td>
<td>12</td>
<td>7</td>
<td>30</td>
<td>12</td>
<td>6</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>15</td>
<td>48</td>
<td>31</td>
<td>4</td>
<td>17</td>
<td>43</td>
<td>8</td>
<td>40</td>
<td>23</td>
</tr>
<tr>
<td>3.</td>
<td>5</td>
<td>16</td>
<td>12</td>
<td>2</td>
<td>9</td>
<td>12</td>
<td>3</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>4.</td>
<td>9</td>
<td>29</td>
<td>12</td>
<td>4</td>
<td>17</td>
<td>12</td>
<td>3</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>9</td>
<td>29</td>
<td>14</td>
<td>10</td>
<td>43</td>
<td>14</td>
<td>8</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>200%</td>
<td>25</td>
<td>74</td>
<td>0</td>
<td>17</td>
<td>74</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total percentage dev.</strong></td>
<td>1280</td>
<td></td>
<td>1488</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean percentage dev.</strong></td>
<td>6.40</td>
<td></td>
<td>7.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table II is to be read as follows:- Activity No. 1 of the Lehman Play Quiz was engaged in during the week preceding the date of investigation by thirteen out of thirty-one boys in Group I, the H.A. variant group. This was 42 per cent of the boys in this group. Seven, or 30 per cent, of the 25 boys in Group II, the norm, engaged in Activity No. 1. Thus, it is evident that the H.A. variant group deviates from the norm by 12 per cent. Six, or 30 per cent, of the 20 boys in Group III, the C.A. variant, engaged in Activity No. 1. Since 30 per cent of the norm group engaged in this activity also, the C.A. variant group deviates not at all from the norm. (The amount of deviation for each group on each of the 200 activities of the Play Quiz was determined similarly.)

The H.A. variant group deviates from the norm by 1280 per cent on all 200 activities. Its mean percentage deviation is 6.40. The C.A. variant group deviates from the norm on all the 200 activities by 1488 per cent. Its mean percentage deviation from the norm is 7.44.

The complete list of activities included in the Lehman Play Quiz may be found in the Appendix.
5. The total of the percentage deviations from the norm on all 200 of the play activities was determined for each variant group. Then the mean percentage deviation from the norm was calculated. (e.g. TABLE II).

6. The number of play activities for which the percentage deviation of the M.A. variant group in each series was greater than that of the C.A. variant group in the same series was determined. Similarly, the number of play activities for which the percentage deviation of the C.A. variant group was greater than that of the M.A. variant group in the same series was also determined. (Table III.)

7. Just as the deviation from the norm, caused by the variation of M.A. or C.A. one year, of the percentage of boys engaging in an activity would be an indication of the influence exerted in this regard by the factor varied; so the deviation from the norm, caused by the variation of M.A. or C.A. one year, in the social character of boys' play activities should be an indication of the influence of the factor varied in this regard. This being so, an effort was made to study the social character of the play activities of the various groups of boys used in this study. For each boy the number of activities engaged in was determined. The number participated in with one or more additional children was next determined. The percentage of the total number of activities that the social activities represented was designated the Index of Social Participation. Thus, an Index of Social Participation of 80 indicates
Table III is to be read as follows: In Series A, the percentage of boys in the M.A. variant group who engaged in play activity No. 1 deviates from the norm by 12 per cent. The percentage of boys in the C.A. variant group who engaged in play activity No. 1 deviates not at all from the norm. Thus, mental age seems to exert the greater influence on the percentage of boys engaging in play activity No. 1. Similarly, M.A. seems to exert a greater influence in activities 2, 3, 4, 5, etc. than does C.A.

The percentage of boys in the M.A. variant group who engaged in activity No. 199 deviates by 9 per cent from the norm. The percentage of boys in the C.A. variant group who engaged in activity No. 199 deviates by 15 per cent from the norm. Thus, it seems that on activity No. 199, C.A. seems to be more influential in determining the percentage of boys participating. Similarly, C.A. seems to exert the greater influence in the case of activity No. 200.

M.A. seems to exert a greater influence than C.A. in the case of 74 of the 200 activities of the Lehman Play Quiz. C.A. seems to exert a greater influence than M.A. in the case of 89 of the 200 activities. (In the other 57 activities, the influence of M.A. and C.A. was the same.)
that 80 per cent of the activities engaged in by the boy were ones in which one or more other children took part. By this method a high Index of Social Participation signifies that the boy in question is relatively social in his play. A low Index of Social Participation indicates that the boy in question is relatively solitary in his play.

8. The mean Index of Social Participation was calculated for each group of boys used in this study.

9. The deviation from the norm of the mean Index of Social Participation of each variant group was determined. The deviations of the C.A. and M.A. variant groups in each series were compared in an effort to determine whether M.A. or C.A. seemed to exert the greater influence on Index of Social Participation. The mean Indices of Social Participation, together with their respective deviations from the norm, are presented in Table VI.
PRESENTATION AND INTERPRETATION OF DATA.

The data obtained by the methods set forth in the preceding chapter are presented, along with their interpretations, in the following tables.

It will be noticed that in four of the six comparisons shown in Table IV (Series A, B, C, & D), the number of activities on which the variation of C.A. seemed to exert the greater influence is larger than the number of activities on which the variation of M.A. seemed to exert the greater influence. In only two of the six comparisons made (Series E, F.), did the variation of M.A. seem to exert more influence in the case of larger number of activities than did the variation of C.A.

Further, the differences in those series where the influence of C.A. seems to excel are greater than in the series where the influence of M.A. seems to excel. The differences by which the influence of C.A. seems to exceed that of M.A. range from 12 to 52 activities. Whereas the differences by which the influence of M.A. seems to exceed that of C.A. range from 2 to 8 activities.
**TABLE IV.**

COMPARATIVE INFLUENCE OF C.A. AND M.A. ON THE 200 ACTIVITIES OF THE LEHMANN PLAY QUIZ*

<table>
<thead>
<tr>
<th>M.A. VARIANT GROUPS</th>
<th>C.A. VARIANT GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group**</td>
<td>No. Act. on which % Dev. exceeds that of C.A. Variant</td>
</tr>
<tr>
<td>I</td>
<td>74</td>
</tr>
<tr>
<td>IV</td>
<td>70</td>
</tr>
<tr>
<td>VII</td>
<td>70</td>
</tr>
<tr>
<td>X</td>
<td>80</td>
</tr>
<tr>
<td>XIII</td>
<td>76</td>
</tr>
<tr>
<td>X</td>
<td>71</td>
</tr>
</tbody>
</table>

* Compare with Table III.
**The M.A. and C.A. of the boys in each group, together with the number, may be determined by referring to Table I.

Table IV is to be read as follows: In Series A, the M.A. Variant seemed to exert a greater influence than the C.A. variant in causing percentage deviations from the norm in the case of 74 activities. The influence of the C.A. variant was greater than that of the M.A. variant in the case of 89 activities. (In the other 37 of the 200 activities, the influence of M.A. and C.A. was the same.)

Thus, the variation of C.A. one year apparently exerted a greater influence in causing percentage deviations from the norm in the case of 15 more play activities than did the variation of M.A. one year.
In so far as the above comparisons are valid indices, there seems to be a tendency for the variation of C.A. to cause the percentage of boys engaging in various play activities to deviate farther from the norm than does the variation of M.A.

The findings presented in Table V seem to substantiate those shown in Table IV. In five of the six comparisons made (Series A, B, C, D, E), the variation of C.A., with M.A. held constant, seemed to cause the greater mean deviation from the norm of the percentage of boys participating in all the activities of the Play Quiz than did the variation of M.A., with C.A. held constant. In only one comparison (Series E) did the variation of M.A. seem to cause the greater mean percentage deviation.

Further, the differences in those comparisons where C.A. seemed to exert the greater influence are in each particular case larger than the difference in the one comparison where M.A. seemed to exert the greater influence. The mean percentage deviation of Group XIII, Series E, the M.A. variant, exceeds that of Group XV, the C.A. variant only by .29 per cent. Whereas the differences by which the mean percentage deviations of the C.A. variant groups exceed those of the M.A. variant groups in the other five comparisons range from .41 to 1.44 per cent.

Here again, the differences found between the influence of mental age and chronological age on the percentage of boys participating in the 200 activities of the Lehman Play Quiz seem definitely to favor chronological age as the more potent factor.
**TABLE V.**  

**MEAN PERCENTAGE DEVIATIONS OF THE M.A. AND C.A. VARIANT GROUPS**

<table>
<thead>
<tr>
<th>Series</th>
<th>Mean Percentage Deviation from Norm of M.A. Variant Groups</th>
<th>Mean Percentage Deviation from Norm of C.A. Variant Groups</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I 6.40</td>
<td>III 7.44</td>
<td>1.04</td>
</tr>
<tr>
<td>B</td>
<td>IV 5.85</td>
<td>VI 6.26</td>
<td>.41</td>
</tr>
<tr>
<td>C</td>
<td>VII 5.30</td>
<td>IX 6.74</td>
<td>1.44</td>
</tr>
<tr>
<td>D</td>
<td>X 4.98</td>
<td>XII 5.63</td>
<td>.65</td>
</tr>
<tr>
<td>E</td>
<td>XIII 5.58</td>
<td>XV 5.29</td>
<td>.29</td>
</tr>
<tr>
<td>F</td>
<td>XVI 4.97</td>
<td>XVIII 5.50</td>
<td>.53</td>
</tr>
</tbody>
</table>

*See Table II, page 11, for derivation of mean percentage deviation.*

Table V is to be read as follows: In Series A, the mean percentage deviation from the norm of Group I, M.A. Variant is 6.40. The mean percentage deviation from the norm of Group III, the C.A. Variant, is 7.44. The mean percent deviation of the C.A. variant group exceeds that of the M.A. variant group by 1.04 per cent.
Table VI is to be read as follows:— In Series A, the mean Index of Social Participation for Group I, the M. A. Variant, is 58.61. The mean Index of Social Participation for Group II, the norm, is 62.26. The mean Index of Social Participation for Group III, the C.A. variant, is 10.10.

The mean Index of Social Participation of the M. A. variant deviates from the norm by 3.65 points. The mean Index of Social Participation of the C. A. variant deviates from the norm by 7.84 points. Thus, the mean Index of the Social Participation of the C. A. variant deviates from the norm 4.19 points more than does the mean Index of Social Participation of the M. A. variant.
In four of the six comparisons made in Table VI (Series A, C, E, F), the variation of C.A. one year, M.A. held constant, seemed to exert greater influence in causing mean Indices of Social Participation to deviate from the norm than did the variation of M.A. one year, with C.A. held constant. In two of the six comparisons made (Series B and D), the variation of M.A. one year, C.A. held constant, seemed to exert the greater influence.

The data here presented seem to indicate quite definitely that C.A. operating alone is more influential than M.A. operating alone in determining the relatively social character of boys' play activities.
VI.

SUMMARY AND CONCLUSIONS.

1. The present study was conceived as an attempt to suggest an answer to the question: Which factor, mental age or chronological age, exerts the greater influence in determining the versatility and social character of boys' play activities.

2. Data regarding the play activities of over 6000 children were secured by means of the Lehman Play Quiz and placed at the disposal of the present writer.

3. The boys whose mental ages were available were divided into six series of groups (3 groups each) for comparisons. Each series consisted of a norm group, boys whose C.A. and M.A. were identical; an M.A. variant group, boys whose C.A. was the same as that of the boys in the norm group, but whose M.A. varied one year from that of the boys in the norm group; and a C.A. variant group, boys whose M.A. was the same as that of the boys in the norm group, but whose C.A. varied one year from that of the norm group. (Table I, p.8.)

4. The percentage of boys in each group engaging in each of the 200 activities listed in the Lehman Play Quiz was noted. The deviation of this percentage from the norm, resulting from the varying of C.A. one year with M.A. held constant, was determined. The percentage deviation from the norm
caused by the variation of M.A. one year with C.A. held constant, was also determined. These percentage deviations were compared for the purpose of determining which had exerted the greater influence, the variation of C.A. or the variation of M.A.

In four of the six comparisons made, the percentage deviation caused by the variation of C.A. was greater in the case of more play activities than was the percentage deviation caused by the variation of M.A. The variation of M.A. seemed to exert the greater influence in only two comparisons; and in these two comparisons, the superiority of its influence was not marked.

5. The mean percentage deviation from the norm on all the 200 activities was determined for each variant group. In five comparisons out of six, the variation of C.A. one year, M.A. held constant, caused a greater deviation from the norm of the mean percentage deviation than did the variation of M.A. one year, C.A. held constant. In only one comparison did the variation of M.A. cause a greater mean percentage deviation from the norm than did the variation of C.A.

6. The mean Index of Social Participation was calculated for each group of boys used in this study. The deviation of this mean Index from the norm, when caused by the variation of M.A. one year with C.A. held constant, was determined. Similarly, the deviation of this mean Index from the norm, when caused by the variation of C.A. one year with M.A. held constant, was also determined. These deviations of the Indices of Social Participation were compared for the purpose of ascertaining whether M.A. or C.A. seemed to exert the greater influence in determining the social
character of the boys' play activities.

In four of the six comparisons made, C.A. operating alone seemed to be a more potent factor in determining the social character of boys' play activities than did M.A. operating alone. In two of the six comparisons, M.A. seemed to exert the greater influence.

Because of the limitations of this study as set forth in Chapter VII, there can be no final conclusions drawn here. The results of the comparisons made, however, are at least suggestive. They indicate that with the boys used in this study, chronological age seems to exert a greater influence in determining the versatility and social character of boys' play activities than does mental age. The differences found, however, were in several cases slight. The data employed seem to indicate that there is no wholesale difference between the influence exerted on the play behavior of boys by the variation of mental age one year and the variation of chronological age one year. Perhaps if C.A. and M.A. were varied two or three years, greater differences might be observable. The present study suggests, however, that whatever differences may be found would favor the greater potency of chronological age. The burden of proof must therefore rest with those educators who support their championship of acceleration with the statement that correspondence of mental age levels is of greater importance in making for normal social adjustments than correspondence of chronological age levels.
In interpreting the above conclusions, it must be kept in mind that the present study is solely quantitative. There probably is a qualitative, as well as a quantitative, aspect of play behavior which is quite significant. The present study takes no account of the former.
VII.

SUGGESTIONS FOR FURTHER INVESTIGATION

There are several limitations to the present study which may tend to detract from the validity of the conclusions drawn. Perhaps an understanding of these limitations will be of value to future investigators who choose to investigate the problem of this study in a more extensive manner, using the technique here employed.

1. The number of boys composing the various norms and the various groups compared with these norms is in several instances too small to assure the validity of the percentages of participation which were calculated. If each group isolated contained at least fifty boys, then the investigator might be more certain than the percentages found reflect actual trends rather than chance variations.

2. The variation of M.A. and C.A. only one year from the norm may not be sufficient to reveal significant differences which may exist between their influences upon play behavior. The variation of these factors two or three years might bring to light more significant differences.

If the two suggestions made above are to be followed, it will be necessary for many more thousands of children to be studied than were used in this investigation.
5. The procedures used in determining the mental ages of the boys used in this study were not uniform. The Terman Group Test of Mental Ability, The National Intelligence Examination, and the Stanford Revision of the Binet-Simon Tests were all used for this purpose. If only one type of test were used, ideally an individual test, the I.A.'s, obtained might be more comparable.

4. The present study is solely quantitative. There are several other aspects of play behavior which need to be taken into account; e.g. quality of play and time devoted to play. These aspects of play behavior, however, are not yet amenable to measurement where a large number of cases is involved.
BIBLIOGRAPHY


APPENDIX

INSERTS:

A. LEHMAN'S PLAY QUIZ

B. MANUAL OF INSTRUCTIONS
A. LEHMAN'S PLAY QUIZ
Part A

What things have you been doing during the past week just because you wanted to?

Read through the following list of toys and games and other things, and as you read through the list, draw a circle with your pencil around each number that stands in front of anything that you have played with during the past week, or anything that you have done during the past week just because you wanted to do it.

1 Football.
2 Basket Ball.
3 Baseball with a hard ball.
4 Ball with an indoor or playground ball.
5 Just playing catch.
6 Volley ball.
7 Handball.
8 Golf.
9 Tennis.
10 Running the gauntlet.

11 Boxing.
12 Wrestling.
13 Doing cross-word puzzles.
14 Checkers.
15 Chess.

16 Dominoes.
17 Marbles.
18 Roller-skating.
19 Sliding on a playground slide.
20 Sliding on a toboggan slide.

21 Coasting on a coaster.
22 Coasting on a wagon.
23 Coasting on a sled.
24 Swinging.
25 Ice-skating.

26 Sleigh-riding.
27 Riding in an auto.
28 Driving an auto.
29 Riding a bicycle.
30 Horse-back riding.

31 Rolling a hoop.
32 Rolling an auto tire.
33 Telling stories.
34 Listening to stories.
35 Watching athletic sports.

36 Excursions to woods, parks, country, etc.
37 Gathering fruit.
38 Gathering berries.
39 Gathering nuts.
40 Gathering flowers.

41 Collecting stamps, birds' eggs, and so on.
42 Just hiking or strolling.
43 Going to the movies.
44 Attending the theatre.
45 Going to entertainments, concerts and so on.

46 Sight-seeing.
47 Attending lectures.
48 Visiting or entertaining company.
49 Chewing gum.
50 Smoking.

51 Having 'dates.'
52 Just loafing or lounging.
53 Social dancing.
54 Folk-dancing.
55 Card games, such as authors, bridge, whist, etc.

56 Literary clubs.
57 Social clubs, or being with the gang.
58 Listening to the victrola.
59 Listening to the radio.
60 Playing the piano (for fun.)

61 Playing other musical instruments for fun.
62 Looking at the Sunday 'funny paper.'
63 Reading jokes of funny sayings.
64 Reading the newspapers.
65 Reading or looking at magazines.

66 Reading books.
67 Reading short stories.
68 Looking at the daily comic strips.
69 Telling or guessing riddles.
70 Writing letters.

71 Writing poems.
72 Telling fortunes or having fortunes told.
73 Hunting.
74 Fishing.
75 Boating or canoeing.

76 Camping out.
77 Building or watching bonfires.
78 Climbing porches, trees, fences, posts, etc.
79 Doing gymnasmum work.
80 Doing stunts in the gymnasmum.

81 Turning handsprings, cartwheels, etc.
82 Doing calisthenics.
83 Playing on the giant stride.
84 Playing teeter-totter.
85 Just running and romping.

86 Running races.
87 Hop, skip and jump.
88 Jumping for distance.
89 Jumping for height.
90 Pole vaulting.
91 Leap frog.
92 Hop-scotch.
93 Jumping or skipping rope.
94 Other hopping games played on sidewalk.
95 Follow your leader.
96 Fox and geese.
97 Kick the can.
98 Run sheep run.
99 Hide and seek.
100 Blind man's bluff.
101 Hide the button.
102 Hide the thimble.
103 Anty-over.
104 Black man.
105 Other tag games.
106 Crack the whip.
107 Whistling.
108 Dodge ball.
109 Old sow.
110 Dare base.
111 Making something.
112 Fixing or repairing something.
113 Bean bags.
114 Jacks.
115 Matching pennies.
116 Throwing dice or Playing 'Put and Take.'
117 Stealing water melons, fruit, etc., for fun.
118 Playing pool.
119 Billiards.
120 Bowling.
121 Croquet.
122 Pitching horse-shoes.
123 Going to Sunday School (If you liked it.)
124 Going to church or to mass.
125 Mumbly peg.

3rd and 4th grades stop here

1st day

126 Throwing rocks or stones.
127 Shinney on your own side.
128 Pillow fights.
129 Snowball fights.
130 Teasing somebody.
131 Teasing birds or animals.
132 Bow and arrows.
133 Shooting a gun.
134 Playing in the sand.
135 Wading in the water.
136 Building a dam.
137 Swimming.
138 Dressing up in older folks' clothing.
139 Playing circus.
140 Playing house.
141 Playing horse.
142 Playing store.
143 Playing school.
144 Playing church.
145 Playing Sunday school.
146 Riding a velocipede.
147 Playing nurse.
148 Playing bandit.
149 Playing soldier.
150 Playing cowboy.
151 Playing Indian.
152 Train conductor, engineer or brakeman.
153 Playing robber and police.
154 Playing movie actor or actress.
155 Playing other make-believe games.
156 Just imagining things.
157 Statuary.
158 Going to parties or picnics.
159 "Here I come" "Where from?"
160 Tin-tin.
161 Post-office.
162 Spin the p'an.
163 London bridge.
164 Other singing games.
165 Just singing.
166 Drop the handkerchief.
167 Three deep.
168 Other ring games.
169 Old witch.
170 Pussy wants a corner.
171 Making mud pies, mud dolls, etc.
172 Clay modelling.
173 Drawing with pencil, pen, chalk or crayon.
174 Painting with water-colors.
175 Cutting paper things with a scissors.
176 Making a scrap-book.
177 Taking snap-shots.
178 Stringing beads.
179 Sewing, knitting, crocheting, etc., for fun.
180 Using a hammer, saw, nails, etc., for fun.
181 Digging caves or dens.
182 Building snow men, snow forts, snow houses.
183 Spinning tops.
184 Flying kites.
185 Walking on stilts.
186 Toy airplanes, toy balloons, toy parachutes.
187 Toy trains, ships, autos, wagons, etc.
188 Playing fire engine (or hook and ladder.)
189 Looking at pictures.
190 Toy blocks.
191 Toy horn, toy drum, etc.
192 Dolls, doll carriages, doll clothes, etc.
193 Other toys.
194 Picture puzzles.
195 Wire puzzles, string puzzles.
196 Making or assembling a radio or other electrical apparatus.
197 Playing with pet dogs.
198 Playing with pet kittens.
199 Playing with other pets.
200 Helping somebody with his work.

**Part B**

Write in the blank spaces below the names of any toys or games or other things which took up some of your time during the past week, and which you liked, but which are not included in the printed list.

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**Part C**

Now count the number of different things that you did during the past week just because you wanted to. Write the number in the blank space below.

I did ........... different things during the past week just because I wanted to.

Now print the letter “A” in front of each thing that you did ALONE. Now count the number of “A’s”. Write the number of “A’s” in the blank space below.

I did ........... of these things all by myself.

**Part D**

Now write in the blank spaces below the numbers of the three things that you liked best. If you are not sure, just guess.


Now write in the blank space below the number of the one thing to which you gave the most time. If you are not sure, just guess.

Number .......... took up more of my time than anything else.

**Part E**

Now state the occupation that you intend to follow ...........................................
This manual of instructions was used in the administration of the Lehman Play Quiz to the children here studied.
LEHMANN'S PLAY QUIZ

INTRODUCTORY STATEMENT

This "Play Quiz" is a means of making a study of the behavior of school children with special reference to such variables as age, sex, race, season, etc., in play activities. In order that the resulting data may be valid it is necessary that the quiz be administered always in a uniform manner. For this reason the following set of detailed directions has been prepared.

The value of this study will depend largely upon the precision with which the directions are followed. It is urged therefore that you READ THE INSTRUCTIONS CAREFULLY. It has been found out that, when teachers fail to follow directions specifically, pupils report having built snow houses at a time when no snow was available. Such results are, of course, absolutely worthless. Therefore, please bear the following points in mind:

1. IN GIVING INSTRUCTIONS TO PUPILS, DO NOT VARY THE SPECIFIC WORDING.

2. DO NOT SUGGEST games or play activities to the pupils at any time. Such suggestions would be almost sure to produce spurious results. Do not allow rivalry to develop over the question as to the number of games engaged in, etc.

3. In reading the instructions to the pupils pause for about two seconds at the end of each sentence. This will afford the pupils time to grasp the meaning of each sentence as it is read. In reading the list of play activities, pause similarly after the name of each activity.* This will afford time for recall.

4. This quiz is too long for 3rd and 4th grade pupils to complete at one sitting. The 3rd and 4th grade pupils will take therefore only the first 125 items the first day of the quiz. They will then finish the task on the following day. The older pupils may finish the quiz at a single sitting.

* Applies only to teachers of grades 3 and 4. Pupils of grade 5 and above will read the list for themselves.
5. READ ALOUD ALL PARTS TYPED IN CAPITAL LETTERS.

**Procedure** (Grade 5 or above)

Before passing the quiz papers, have the pupils clear their desks. Then, having gained their attention, read to them the following:

"TODAY I AM GOING TO GIVE YOU A QUIZ THAT WILL BE FUN TO TAKE. IT IS A QUIZ ON WHAT YOU HAVE BEEN DOING DURING THE PAST WEEK JUST BECAUSE YOU WANTED TO."

Now pass out the quiz papers, allowing each pupil one copy only. After the papers have been distributed, continue to read the capitalised words and point to the spaces as they are mentioned in the directions following:

"NOW LET US FILL IN THE EMPTY SPACES. NOTICE THE PLACE WHERE IT SAYS 'NAME'. WRITE YOUR NAME IN QUICKLY. NOTICE THE PLACE WHERE IT SAYS 'GRADE'. WRITE IN YOUR GRADE. NOTICE THE NEXT PLACE 'BOY OR GIRL'. WRITE IN WHICH YOU ARE. NEXT 'AGE LAST BIRTHDAY'. WRITE IN YOUR AGE ON YOUR LAST BIRTHDAY. REMEMBER, NOT YOU AGE THE NEXT TIME YOU HAVE A BIRTHDAY, BUT YOUR AGE ON YOUR LAST BIRTHDAY."

"NOW NOTICE THE PLACE WHERE IT SAYS 'NUMBER OF BROTHERS'. PRINT THE NUMBER THAT TELLS HOW MANY BROTHERS YOU HAVE. IF YOU HAVE NO BROTHERS, PRINT ZERO. NOW NOTICE WHERE IT SAYS 'NUMBER OF SISTERS'. PRINT THE NUMBER THAT TELLS HOW MANY SISTERS YOU HAVE. IF YOU HAVE NO SISTERS, PRINT ZERO."

"NOW NOTICE WHERE IT SAYS 'CITY'. HERE YOU MUST WRITE IN THE NAME ............. (Mention the name of the city and spell it for them. Rural teachers will please mention the name of their county and have the pupils insert it in this space.)"

"NOW NOTICE THE LAST EMPTY SPACE 'DATE'. WRITE IN THE PRESENT DATE ____192___. (Give them the month, the day of the month, and the year.)"

"NOW LAY YOUR PENCILS DOWN. LISTEN CAREFULLY. TO DO WELL IN THIS TEST YOU MUST DO JUST ONE THING AT A TIME."

"TURN THE FIRST PAGE AND NOTICE THIS LIST OF TOYS AND GAMES ON PAGE 2. (Hold up a sample play quiz and point to page 2.) IN A MOMENT WE ARE GOING TO READ THROUGH THIS LIST. DO NOT START WORK YET. WHEN YOU READ THROUGH THE LIST DRAW A CIRCLE
AROUND EACH NUMBER THAT STANDS IN FRONT OF ANY TOY THAT YOU
HAVE BEEN PLAYING WITH, OR ANY GAME THAT YOU HAVE BEEN PLAYING,
OR ANYTHING ELSE THAT YOU HAVE BEEN DOING, DURING THE PAST
WEEK, JUST BECAUSE YOU WANTED TO. DO IT LIKE THIS:— (Write
the following phrases on the blackboard. Write the digits also)

1. Riding on a warship.  
2. Going up in an airplane.

Continue to read the capitalized words:— "IF YOU
DID THOSE THINGS DURING THE PAST WEEK, AND IF YOU LIKED TO DO
THEM, DRAW CIRCLES AROUND THE NUMBERS IN FRONT OF THEM, LIKE
THIS:— (Write the following phrases on the blackboard. Write the digits also)

1. Riding on a warship.  
2. Going up in an airplane.

"BUT IF YOU DID NOT DO THOSE THINGS DURING THE PAST
WEEK, OR IF YOU DID THEM, BUT DID NOT LIKE DOING THEM, DO NOT
MAKE ANY CIRCLES.

"BE CAREFUL NOT TO MAKE ANY MISTAKES, BUT IF YOU DO
MAKE A MISTAKE, DO NOT ERASE. JUST DRAW A LINE THROUGH THE
MISTAKE LIKE THIS:— (Draw a line through the circles on the
blackboard, thus:—

1. Riding on a warship.  
2. Going up in an airplane.

Continue reading the capitalized words:— "DO NOT
THINK OF THE THINGS YOU HAVE BEEN WATCHING OTHER PEOPLE HAVING
FUN AT. THINK OF JUST THE THINGS THAT YOU HAVE BEEN HAVING
FUN DOING. DO NOT REPORT ANY OF THE THINGS THAT YOU DID A
LONG TIME AGO. REPORT THE THINGS THAT YOU HAVE BEEN DOING
DURING THE PAST WEEK. DO NOT PUT JUST THE THINGS THAT
YOU HAVE BEEN DOING HERE AT SCHOOL. YOU MUST PUT DOWN THE THINGS
THAT YOU HAVE BEEN DOING AT SCHOOL, AND AT HOME, AND EVERY
PLACE ELSE THAT YOU HAVE BEEN HAVING ANY FUN.

"IN A MOMENT I AM GOING TO ASK YOU TO READ THROUGH
THE ENTIRE LIST. MAKE THE CIRCLES THE FIRST TIME YOU READ
IT. IT WOULD TAKE TOO MUCH TIME IF YOU WERE TO READ THROUGH
THE LIST AND MAKE THE CIRCLES AFTERWARD.

"WHENEVER YOU FIND THAT YOU HAVE FORGOTTEN TO MAKE
A CIRCLE THAT YOU SHOULD HAVE MADE, GO BACK AND MAKE IT.

"WHEN YOU GET TO THE PLACE WHERE IT SAYS "PART B",
LAY YOUR PENCILS DOWN SO THAT I CAN TELL WHEN ALL HAVE FINISHED.

"Watching athletic sports" (No. 199) is plainly
an exception to this rule. Say nothing about
exceptions unless the question is raised.
IT WILL BE ALL RIGHT FOR YOU TO READ ON AFTER YOU GET TO "PART B," BUT DO NOT DO ANY WRITING. YOU MIGHT MAKE SOME MISTAKES.

"IS EVERYBODY READY? YOU MAY START READING THE LIST RIGHT NOW."

PART B.

When the pupils are ready for Part B, say to them:—
"NOW DO YOU SEE WHERE IT SAYS "PART B"? AND DO YOU SEE THESE EMPTY SPACES? (Point to them) NOW THINK OF ANY TOYS THAT YOU HAVE PLAYED WITH, OR ANY GAMES THAT YOU HAVE PLAYED DURING THE PAST WEEK, WHICH ARE NOT PRINTED IN THE LIST. IF YOU CAN THINK OF ANY, WRITE THEM IN THE EMPTY SPACES OF PART B."
(Eating, sleeping, etc., are not to be written in Part B.)

PART C.

When the pupils are ready for Part C, say to them:—
"NOW DO YOU SEE WHERE IT SAYS "PART C"? AND DO YOU SEE WHERE IT SAYS "I DID ................. DIFFERENT THINGS DURING THE PAST WEEK JUST BECAUSE I WANTED TO"? (Point to the proper place) NOW GO BACK OVER THE ENTIRE LIST AND COUNT THE NUMBER OF DIFFERENT THINGS THAT YOU DID DURING THE PAST WEEK AND WRITE THE NUMBER IN THIS EMPTY SPACE. (Point to the proper place and allow time for counting.)

After the preceding task has been finished, say to the pupils:— "NOW LISTEN CAREFULLY. I WANT YOU TO PRINT THE LETTER 'A' IN FRONT OF EACH THING THAT YOU DID ONLY WHEN YOU WERE ALONE OR WITH GROWN-UPS.

"FOR EXAMPLE, LOOK AT ACTIVITY NO. 26, "RIDING IN AN AUTO". OF COURSE, IF YOU DID NOT GO AUTO RIDING DURING THE PAST WEEK YOU MUST NOT PRINT ANYTHING. IF YOU WENT AUTO RIDING EVEN ONCE DURING THE PAST WEEK WITH ONE OR MORE PEOPLE, OTHER THAN GROWN-UPS, YOU MUST NOT PRINT ANYTHING. BUT IF YOU WENT AUTO RIDING ONLY ALONE, OR WITH GROWN-UPS, PRINT THE LETTER 'A' IN FRONT OF ACTIVITY NO. 26.

"NOW LOOK AT ACTIVITY NO. 40, "GOING TO THE MOVIES". IF YOU DID NOT GO TO THE PICTURE SHOW AT ALL DURING THE PAST WEEK DO NOT PRINT ANYTHING. IF YOU WENT TO THE PICTURE SHOW EVEN ONCE DURING THE PAST WEEK WITH ONE OR MORE PEOPLE, OTHER THAN GROWN-UPS, DO NOT PRINT ANYTHING. (As here used "going with them" means going with them all the way, or any part of the way, to or from the show) BUT IF YOU WENT TO THE PICTURE SHOW ONLY ALONE, OR WITH GROWN-UPS, PRINT THE LETTER 'A' IN FRONT OF ACTIVITY NO. 40."

"NOW GO THROUGH THE ENTIRE LIST OF ACTIVITIES AND PRINT THE LETTER 'A' IN FRONT OF EACH THING THAT YOU DID ONLY WHEN YOU WERE ALONE OR WITH GROWN-UPS.

When the pupils have finished the preceding task say to them: "NOW COUNT THE NUMBER OF 'A'S AND WRITE THE NUMBER IN THE NEXT EMPTY SPACE." (Point to it and allow time for counting.)

PART D.

When the pupils are ready for Part D, say to them: "HOW DO YOU SEE WHERE IT SAYS 'PART D'? AND DO YOU SEE WHERE IT SAYS 'I LIKED NUMBER ............. BEST OF ALL. I LIKED NUMBER ............. NEXT BEST. I LIKED NUMBER ............. THIRD BEST? (Point to these three sentences) WHICH THREE THINGS DID YOU LIKE BEST TO DO? LET US GO BACK AND LOOK AT ALL THE PLACES WHERE WE HAVE PUT CIRCLES. PUT THE NUMBER OF THE ONE THING THAT YOU LIKED BEST IN THIS FIRST EMPTY SPACE. (Point to it.) PUT THE NUMBER OF THE THING THAT YOU LIKED NEXT BEST IN THIS SECOND SPACE. (Point to it.) PUT THE NUMBER OF THE THING THAT YOU LIKED THIRD BEST IN THIS THIRD EMPTY SPACE. (Point to it.) IF YOU ARE NOT SURE WHICH THINGS YOU HAD MOST FUN DOING, JUST GUESS."

After this has been completed say to the class: "NOW DO YOU SEE THIS LAST LINE WHERE IT SAYS 'NUMBER ............. TOOK UP MORE OF MY TIME THAN ANYTHING ELSE'? NOW THINK OF THE ONE THING THAT TOOK UP MOST OF YOUR SPARE TIME AND PUT ITS NUMBER IN THIS LAST EMPTY SPACE. (Point to it.) IF YOU ARE NOT SURE OF THE ONE THING THAT TOOK UP MOST OF YOUR SPARE TIME, JUST GUESS."

After all four parts of the quiz have been completed, collect the papers. Since this is not a speed test, the papers need not be handed in simultaneously. After the papers have been collected, glance hastily through the pile and note any gross errors that may have been made. If you do this in the presence of the class it might be well to explain that you are merely seeing whether everyone has followed the directions carefully.

Note any papers which seem to have an excessive number of circles. Question the owners of such papers and, if they admit that they failed to pay any attention to the phrase 'During the past week', make a prominent notation to that effect on the front page of their quiz sheets.

Please return the unused quiz sheets along with the others. You are, of course, welcome to retain samples if you want them.