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# A study of the variability of the galvanic skin response of a selected group of eleven-year-old children

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BOSTON UNIVERSITY  
SCHOOL OF EDUCATION

Thesis

A STUDY OF THE VARIABILITY OF THE GALVANIC SKIN RESPONSE  
OF A SELECTED GROUP OF ELEVEN-YEAR-OLD CHILDREN

Submitted by

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(B.S., Boston University, 1949)

In Partial Fulfillment of Requirements for  
the Degree of Master of Education

1953

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CHAPTER I  
INTRODUCTION

1. Purpose

In dealing with the galvanic skin response we are involved, it would appear, in a study of human emotion. This thesis does not in any way attempt to determine the exact quality that is measured but is, rather, an analysis of the response readings of 25 eleven-year-old children. The testing was done at the Peirce Elementary School <sup>1/</sup> from January 28, 1952, to February 29, 1952, inclusive.

2. Justification

Previous studies have but scratched the surface of knowledge necessary for the complete understanding of galvanic skin response and its part in the picture of emotion. This study was undertaken as a result of the need to know more about the response readings of young children in a "normal" classroom situation. It is hoped that it may contribute to future studies in the attempt to make galvanic skin response a useful measurement in our understanding of emotion.

1/170 Temple Street, West Newton, Massachusetts

3. Statement of Problem

This is a study of the variability, if any, of the galvanic skin response of a selected group of 25 eleven-year-old children. The data has been considered in terms of: (1) sex; (2) intelligence; (3) time of day.

## CHAPTER II

### REVIEW OF LITERATURE

Interest in recording and interpreting galvanic skin response data in prescribed scientific terms became most prominent in the late 1920's and early 1930's. Considerable literature was printed as the result of actual experimentation. Many studies claimed a high correlation between galvanic skin response and emotion, although there was a diversity of opinion. Landis was very active in the field during this era, and contributed to the diversity.<sup>1/</sup>, <sup>2/</sup>

A most thorough study was carried out by Landis and Hunt<sup>3/</sup> in July and August of 1933. In this study, a scientific laboratory was used and the subjects were classified as follows: 2 naive subjects, 3 students of advanced psychology, 1 introspectionist, 5 eclectics, 3 psychoanalysts, 4 dementia praecox, and 4 manic depressives. These subjects

1/C. Landis and H.N. De Weck, "The Electrical Phenomena of the Skin," Psychological Bulletin (1929), 26:64-119.

2/C. Landis, "Electrical Phenomena of the Skin," Psychological Bulletin (1932), 29:693-752.

3/C. Landis and W.A. Hunt, "The Conscious Correlates of the Galvanic Skin Response," Journal of Experimental Psychology (1935), 18:505-529.

were given thirty words from the Jung list.<sup>1/</sup> The words were supposed to create within the subjects feelings of emotion, humor, startle, etc.

The investigators stated: "In short, it (GSR) is not the exclusive correlation of anything, but rather would seem to be a phenomenon of great generality." This comes close to Sear's opinion that "...perhaps tension or feeling tension would best fit the cases of high psychogalvanic reactivity."<sup>2/</sup> Landis and Hunt further felt that the galvanic skin response would not be found frequently in sustained emotion, but would rather indicate a change in direction of mental activity.

It must be remembered that while these experiments were carried on by reliable researchers, their small number of subjects, as well as their laboratory environment, may have had an influence upon the results that we are unable to calculate.

Later research centered around the improvement of the electrical means of measuring skin resistance. In 1943 Batcher said: "There is a very close relation between human emotion, mental activity, certain physical conditions, and body reactions. Instruments have been designed that will

<sup>1/</sup>C.G. Jung, Studies in Word Association, Heinemann, London 1918.

<sup>2/</sup>R. Sears, "Psychological Responses in Arithmetic Work: Effects of Experimental Changes in Addition," Archives of Psychology (1933), 155:56-57.

detect changes in the emotion by direct measurements of the electrical resistance of the body."<sup>1/</sup>

Johnson<sup>2/</sup> made a study of college athletes in 1950, in which the galvanic skin response, blood pressure, and heart rate were used to measure emotion. Johnson felt that the galvanic skin response was the best single indicator of the battery used. It was the simplest to administer, but was also subject to easy breakage or malfunction.

In 1952, Campbell<sup>3/</sup> carried on a study of the galvanic skin response of girls playing varsity basketball. Her findings indicated that there was some relationship between the galvanic skin response and game performance. She also concluded that as age increases, galvanic skin responses tend to become lower.

Brazier<sup>4/</sup> published a book in 1951 entitled The Electrical Activity of the Nervous System. Her work, although not dealing with the galvanic skin response as such, contributed a great deal to the background knowledge of the author of this thesis.

<sup>1/</sup>R.R. Batcher, "Electronic Aids in the Biological Sciences," Electronic Industries (1943), 2:86-88.

<sup>2/</sup>W.R. Johnson, A Study of the Emotions of College Athletes, Unpublished Doctorate Dissertation, Boston University, 1950.

<sup>3/</sup>J.L. Campbell, A Study of the Significance of Galvanic Skin Response in Relationship to Performance of Girls in Varsity Basketball Games, Unpublished Master's Thesis, Boston University, 1952.

<sup>4/</sup>M.A.B. Brazier, The Electrical Activity of the Nervous System, The Macmillan Company, New York, 1951.

### CHAPTER III

#### METHOD AND PROCEDURE

The subjects of this study were students of the author, and consisted of a class of 31 children. The class was a combination fifth and sixth grade. After collecting the data, it was decided to analyze the material in terms of age rather than grade and, as a result, six youngsters were dropped from the study. This group of six included 2 thirteen-year-old children and 4 twelve-year-old children. The age limits were established as 11 years 0 months to 11 years 12 months, as of the testing period.

Readings were generally taken at prescribed times, with limits set as follows: one check between 8:30-9:30 A.M.; one check between 11:00 A.M. and 12:00 Noon; one check between 1:30-2:00 P.M.; and one check between 3:00-3:30 P.M. Afternoon readings were taken on Mondays, Wednesdays, and Fridays only, because Tuesday and Thursday afternoons are set aside for extra curricular activities such as music and sports in the Newton Public Schools. Occasionally it was impossible to follow the testing program through the prescribed two or four readings per day, and, in fact, there were days when no testing was done. This was a result of activities such as field trips and assemblies.

In procuring an instrument to carry on the testing, a psychogalvanometer similar to the one used by Johnson<sup>1/</sup> was selected.<sup>2/</sup> It met the prerequisites set forth by Ruckmick:<sup>3/</sup>

1. The area of contact with the skin should be kept constant, but not be of such size as to cause an electric shock.
2. Pressure on the skin should be constant but not be excessive.
3. Moisture of the skin making contact should be constant.
4. The instrument should not affect the reading itself, nor be too impressive.

When using the psychogalvanometer with these children, it was set at 25 microamperes rather than at 50 microamperes which is often used when testing adults.

Before testing was started, the instrument was explained to the children. They were told that just what the instrument measured had not been definitely determined, and that perhaps more would be learned about the instrument

1/Op. cit.

2/The instrument was the Harmon-Johnson Psychogalvanometer, and is available at the Boston University School of Education, Boston, Massachusetts.

3/Christian Ruckmick, *The Psychology of Feeling and Emotion*, McGraw-Hill Book Company, Incorporated, New York, 1936, p. 354.

by testing them. It was explained that the instrument might measure whether they felt like working hard, or whether they were "peppy". Preliminary measurements were taken so that each child knew that the instrument would not hurt him. In spite of the fact that the administrator warned the children about making any decisions as to what the instrument measured, the children persisted in naming the instrument, the most common name being the "Happy Meter". The children were most cooperative throughout the experiment.

In the actual testing, each child stood in front of the administrator so as to be unable to read the instrument. The middle and fore fingers were placed on the electrodes, which were  $1\frac{1}{2}$  inches apart on the end of a 15 inch rectangular piece of plastic. This piece of plastic was held by the administrator at the end opposite to the electrodes. In giving the tests, this piece of plastic was always held by the administrator so as to be adjustable, and thus permit maintenance of equal pressure on the electrodes by the subject. (If the instrument rested on a table, for instance, one subject might exert a great deal of pressure and another very little without the administrator knowing it.)

Those children with excess moisture on their fingers were asked to wipe off their hands on their clothing. When

this was done, the administrator touched the subject's hand before testing in order to discharge any static electricity that might have been generated.

Those children who were absent during any of the testing were carried in the experiment, but the means were computed in regard to actual attendance.

Arbitrary division of intelligence quotients was made with H equal to high, M equal to medium, and L equal to low. The limits for these classifications were as follows: H--115 or higher, M--105-114, I--104 or lower. The intelligence quotient was based on the results of Kuhlmann-Anderson tests.<sup>1/</sup>

<sup>1/</sup>F. Kuhlmann and R. Anderson, Forms C and F, Personnel Press, Incorporated, Baltimore.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

Table 1 lists the galvanic skin responses of the 25 children tested. The 18 testing days cover a period of four school weeks. During the time of testing, there were 147 absentees. A total of 1078 individual responses has been recorded. The total galvanic skin response in terms of microamperes is 14,512 and the mean is 13.5.

The median of the individual subject means is 12.5 (Table 2). The standard deviation is 6.6, and the means of 17 children, or 68 per cent of the total tested, fall between plus and minus one standard deviation. The standard error is 1.32. The median of the class means for each testing time is 13.1, and the standard deviation is 2.7. The means of 41 class readings, or 82 per cent of the 49 total, fall between plus and minus one standard deviation. The standard error for the class means is 0.39. It would seem that the large standard deviation of the individual means is a result of differences among the subjects that are more or less constant. This difference is cancelled out in the class means, resulting in a smaller standard deviation.

Table 1. Galvanic Skin Response

Child	Sex	I.Q. <sup>a/</sup>	Monday Jan. 28				Wednesday Jan. 30				Thursday Jan. 31				Friday Feb. 1				Monday Feb. 4		Tuesday Feb. 5		Wednesday Feb. 6				Thursday Feb. 7				Friday Feb. 8			
			C <sup>b/</sup>		D		A	B	C	D	A	B	B	C	D	A	B	A	B	A	B	C	D	A	B	A	B	C	D					
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)				
1....	M	H	7	-	12	7	7	8	9	5	12	8	8	-	-	7	9	-	11	11	10	10	7	9	8	11	6							
2....	M	H	17	34	8	20	17	30	27	28	28	20	31	12	28	40	35	50 <sup>c/</sup>	46	13	50 <sup>c/</sup>	32	50	50	50 <sup>c/</sup>	36	50 <sup>c/</sup>							
3....	M	H	19	10	15	37	32	19	20	14	20	10	11	8	16	10	11	-	28	12	9	10	15	-	-	-	-							
4....	M	H	11	10	10	11	12	10	6	19	8	8	14	14	16	11	13	14	11	7	7	10	12	8	8	9	16							
5....	M	H	6	6	6	7	8	12	8	8	6	7	9	7	6	11	12	6	10	8	5	11	10	6	8	8	10							
6....	M	M	14	15	12	16	12	15	5	5	10	10	18	-	-	-	-	-	-	-	6	16	14	19	6	16								
7....	M	M	7	6	6	11	6	6	5	6	5	3	5	6	5	5	4	10	8	-	5	6	3	7	5	5								
8....	M	M	9	14	7	19	7	17	10	6	14	10	9	8	7	6	12	12	15	8	18	16	10	12	11	8	11							
9....	M	M	26	19	12	21	22	25	14	20	10	8	25	7	24	13	24	16	17	10	18	26	17	9	15	8	10							
10....	M	M	19	15	12	17	14	15	12	22	15	11	16	18	29	23	28	13	19	16	15	10	14	18	19	8	22							
11....	M	L	21	10	5	12	18	12	10	9	10	10	9	11	9	8	10	10	7	11	24	18	8	9	15	8	10							
12....	M	L	20	20	15	30	15	21	16	18	-	-	-	28	15	16	18	20	14	21	15	15	10	13	17	14	19							
13....	M	L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
14....	M	L	8	20	6	23	17	8	7	18	13	10	22	-	-	15	11	22	12	7	28	12	20	6	19	20	30							
15....	F	H	4	4	3	7	-	-	-	-	-	-	-	-	-	4	3	5	5	7	3	6	3	4	3	3	3							
16....	F	H	6	8	15	9	7	7	12	10	8	7	7	11	5	5	10	8	10	6	7	15	7	11	8	9	10							
17....	F	H	11	11	11	8	14	8	15	11	11	14	21	10	19	-	-	14	15	7	8	12	19	11	33	19	17							
18....	F	H	16	5	26	12	9	12	18	17	10	10	12	20	14	18	15	24	18	16	23	13	5	11	13	15	7							
19....	F	M	-	-	6	8	10	7	19	10	9	6	7	7	6	8	11	5	9	6	7	10	9	-	-	-	-							
20....	F	M	11	10	3	10	8	6	3	14	16	5	6	5	9	16	16	5	24	5	12	7	11	6	13	4	9							
21....	F	M	7	4	7	9	9	6	8	6	10	10	9	10	7	17	13	12	15	15	17	18	18	9	15	11	21							
22....	F	L	-	-	12	20	18	17	22	16	24	17	25	12	13	20	30	30	30	15	24	20	28	29	25	24	15							
23....	F	L	3	3	3	5	5	6	5	3	7	4	6	8	4	5	5	4	5	8	9	5	3	4	8	5	5							
24....	F	L	25	21	30	15	31	30	35	40	25	27	26	9	22	4	20	26	13	8	26	11	20	20	33	8	27							
25....	F	L	-	-	7	20	10	9	9	10	6	8	17	12	19	11	15	10	12	20	9	13	20	12	13	10	12							
Total.....			267	245	249	354	308	306	295	315	277	223	313	223	273	273	326	310	356	245	344	311	338	274	360	249	331							
Number of			21	20	24	24	23	23	23	23	22	22	22	20	20	22	22	21	23	23	22	24	24	22	22	22	22							
Mean.....			127	123	104	147	134	133	128	137	126	101	142	111	136	124	148	148	155	106	156	130	141	125	164	113	151							

a/H--115 or higher

M--105-114

L--104 or lower

b/A--8:30-9:30 A.M.

B--11:00-12:00 Noon

C--1:30-2:00 P.M.

D--3:00-3:30 P.M.

Readings of 25 Eleven-Year-Old Children

Monday Feb. 11				Tuesday Feb. 12			Wed'day Feb. 13	Thursday Feb. 14				Friday Feb. 15				Monday Feb. 25				Tuesday Feb. 26			Wednesday Feb. 27			Friday Feb. 29			Individual Read-	
A	B	C	D	B	C	D	B	A	A	B	C	D	A	D	A	B	A	B	D	A	B	C	D	Total	ings	Mean				
(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)				
8	13	8	8	13	8	14	5	17	7	16	9	13	7	4	10	9	5	8	4	8	7	10	8	401	45	8.9				
15	38	11	40	42	28	28	50	50	14	35	25	50	-	25	32	50	34	22	13	9	50	15	24	1502	48	31.5				
8	9	9	11	9	9	-	14	15	8	8	17	26	8	5	5	15	8	8	8	7	8	12	10	563	43	13.1				
17	7	9	6	-	-	-	-	-	6	19	13	11	4	5	5	22	8	6	5	6	4	-	-	428	42	10.2				
6	13	8	12	11	11	9	8	13	9	10	10	13	5	6	4	9	4	6	2	4	6	4	7	391	49	8.0				
9	10	17	11	30	13	10	11	13	10	14	18	15	2	9	-	-	-	-	-	-	-	-	-	401	32	12.5				
4	4	9	7	6	12	5	-	-	-	-	-	-	4	5	3	9	5	5	-	6	6	7	10	247	41	6.0				
5	3	6	6	11	7	6	7	11	7	6	7	8	9	6	10	7	10	6	5	9	6	8	11	453	49	9.3				
12	15	15	22	20	15	44	9	10	7	18	10	27	9	8	5	13	7	7	5	6	5	3	6	714	49	14.6				
11	15	26	19	28	12	17	11	26	22	22	44	34	38	31	20	36	37	48	22	12	50	15	11	1027	49	21.0				
13	7	15	12	15	12	36	17	21	13	28	40	45	12	15	11	15	14	20	31	11	28	8	27	750	49	15.3				
21	7	26	16	24	18	13	16	16	10	23	18	27	10	12	21	21	21	15	11	10	16	10	11	783	46	17.0				
23	11	25	20	-	-	-	-	28	30	35	43	27	-	-	15	21	12	12	45	23	45	20	35	470	18	26.1				
14	31	12	20	21	17	26	18	31	18	23	8	32	-	-	-	-	-	-	-	-	-	-	-	625	36	17.4				
3	3	4	4	3	3	5	3	4	3	5	4	4	-	2	2	3	3	3	2	3	3	3	4	143	39	3.7				
8	8	9	7	13	10	11	8	7	11	11	9	10	9	9	9	9	4	15	9	7	7	5	6	429	49	8.8				
8	15	6	11	35	17	15	41	28	16	9	16	13	16	9	6	19	11	23	9	14	23	15	25	719	47	15.3				
6	10	10	8	10	11	11	19	13	12	15	16	15	16	22	20	19	10	16	15	14	20	27	12	706	49	14.4				
5	13	3	8	9	12	5	7	11	7	6	6	6	3	8	5	17	-	19	6	4	19	4	16	359	42	8.6				
5	12	10	16	13	5	6	41	5	4	7	10	32	3	8	3	25	3	8	7	7	14	6	7	491	49	10.0				
11	12	11	13	-	-	-	-	-	-	-	-	-	12	6	9	10	9	10	8	-	10	-	8	412	38	10.8				
19	16	17	25	30	16	18	25	25	15	42	33	29	12	5	16	26	28	35	11	17	50	28	10	1034	47	22.0				
5	4	5	5	4	6	4	7	6	5	4	6	6	3	3	2	4	3	5	3	3	3	5	3	232	49	4.7				
40	15	14	17	45	-	-	40	6	2	11	15	40	-	-	-	-	-	-	-	30	18	13	8	866	40	21.6				
-	-	-	-	-	-	-	-	17	-	-	-	-	8	11	13	5	5	5	4	-	8	-	6	366	33	11.1				
276	291	285	324	392	242	283	357	373	236	367	377	483	190	214	226	364	241	302	225	210	406	218	265	14512	1078					
24	24	24	24	21	20	19	20	22	22	22	22	22	20	22	22	23	21	22	21	21	23	20	22	1078						
115	121	119	135	187	121	149	178	170	107	167	171	220	95	97	103	165	115	137	107	100	177	109	120							

Mean of total responses--13.5  
 Median of daily means --13.1  
 Median of individual means--12.5

Table 2. Standard Deviation and Standard Error of Individual and Class Means of Galvanic Skin Response

Means	Standard Median Deviation	Standard Deviation	Per cent of Means Between Plus and Minus One Standard Deviation	Standard Error
(1)	(2)	(3)	(4)	(5)
Individual	12.5	6.6	68	1.32
Class	13.1	2.7	82	0.39

Table 3 presents the means of readings grouped according to the days of the week. Tuesdays and Thursdays are not included because school was held only in the morning on these days. The difference between the means of the Monday and Wednesday readings is 1.2; the difference between the means of the Wednesday and Friday readings is 1.0; the difference between the means of the Monday and Friday readings is 2.2. It is interesting to note that the highest daily mean of the entire testing period is on the day preceding spring vacation (the third Friday), and that the lowest daily mean is on the fourth Monday, the first day of the return to school.

Table 3. Means of Individual Days of the Week, and of All Readings when Grouped According to the Days of the Week

Weeks	Monday	Wednesday	Friday
(1)	(2)	(3)	(4)
First.....	12.5	13.0	12.3
Second.....	12.4	14.1	13.8
Third.....	12.3	- <sup>a/</sup>	16.4
Fourth.....	9.6	12.0	12.7
Means of All Readings....	11.8	13.0	14.0

<sup>a/</sup>School held only in the morning

The mean of all males tested is 15.0. For all females, the mean is 11.9. There is, therefore, a difference of 3.1 between the means of the sexes of the children involved in this study. The mean of all children with a high intelligence rating is 11.8. For those with a low intelligence rating the mean is 16.9. The difference between these means is 5.1. Each of these differences is greater than the standard error of the individual means (1.32).

The means of the readings during each prescribed time interval, as previously described, are as follows: A--12.0, B--15.3, C--12.2, and D--13.9. The morning session (readings A and B) was  $3\frac{1}{2}$  hours long, and the afternoon session (readings C and D) was  $2\frac{1}{2}$  hours long. The mean of the readings just before lunchtime (B) is higher than the means of readings taken at other times of the day. The difference between the former reading and the first morning reading (A) is 3.3. The difference between the final afternoon reading (D) and the first afternoon reading (C) is 1.7. Each of these differences is greater than the standard error of the class means (0.39).

## CHAPTER V

### SUMMARY

1. The mean for all readings taken in this experiment is 13.5.
2. The median of the individual subject means is 12.5.
3. The median of the class means is 13.1.
4. Sixty-eight per cent of the 25 individual subject means fall between plus one and minus one standard deviation.
5. Eighty-two per cent of the 49 class means fall between plus one and minus one standard deviation.
6. The standard error for individual subject means is 1.32.
7. The standard error for class means is 0.39.
8. The means of class readings for Monday, Wednesday, and Friday are 11.8, 13.0, and 14.0 respectively. The differences of the means of Monday and Wednesday, Wednesday and Friday, and Monday and Friday are 1.2, 1.0, and 2.2 respectively.
9. The male mean is 15.0 and the female mean is 11.9, a difference of 3.1.
10. The mean of children rated as having a high intelligence is 11.8, and the mean of those rated as having a low intelligence is 16.9, a difference of 5.1.
11. The mean of readings taken just before lunch is higher

than the means of readings taken at other times of the school day.

12. The mean of the final (second) readings of a morning or afternoon session is higher than the mean of the first readings of that session.

CHAPTER VI  
CONCLUSIONS

1. With the conditions and subjects of this study, the means of the galvanic skin response readings increase from Monday to Wednesday to Friday.
2. The difference between the means of the male and female responses is significant under the conditions of this study.
3. The difference between the means of readings of children rated as having a high intelligence and those rated as having a low intelligence in this study is significant.
4. The mean of the final (second) reading of the morning or afternoon session is significantly higher than the mean of the first reading of the respective session in this study.
5. The efficiency of the Harmon-Johnson Psychogalvanometer would be improved by situating the electrodes so that they do not have to be held by the examiner.

## CHAPTER VII

### SUGGESTIONS FOR FUTURE STUDIES

1. The difference between the means of the male and female galvanic skin responses warrants further study.
2. The difference between the means of the galvanic skin responses of the high and low intelligence groups warrants further study.
3. The differences in means of readings taken at various times of the school day warrant further study of galvanic skin response when fatigue is the specific variable.
4. Future studies of the galvanic skin response of younger children are recommended.

Tables four through eight are the galvanic skin response readings of grades one through five. This data was not used in the study because the writer was not the teacher in these grades, and, upon examination of the procedure, felt that insufficient time had been allowed to familiarize the children with the instrument. The responses of grade one are the ninth, tenth, eleventh, and twelfth testings; grade five responses are the fifth, sixth, seventh, and eighth testings; grades two, three and four responses are the first, second, third, and fourth testings.

APPENDIX

Table 4. Galvanic Skin Response Readings of Children in Grade One on June 11, 1952

Case Number	Sex	Age in Years	I.Q. <sup>a/</sup>	Readings				
				8:45 A.M.	11:45 A.M.	1:30 P.M.	3:15 P.M.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1	M	6	H	12	9	17	7	
2	M	6	H	11	13	7	17	
3	F	7	H	7	19	4	10	
4	F	6	M	11	25	20	23	
5	M	6	M	15	10	33	35	
6	F	6	H	10	11	10	12	
7	F	6	M	6	9	6	13	
8	M	6	H	16	13	23	19	
9	M	6	H	10	10	6	9	
10	F	6	H	7	6	7	13	
11	M	6	M	10	7	8	13	
12	M	6	M	25	22	45	35	
13	M	6	L	26	41	10	13	
14	F	6	H	7	4	8	6	
15	M	6	M	5	4	4	5	
16	F	6	M	4	3	6	7	
17	F	6	H	13	17	17	13	
18	M	6	L	5	4	4	6	
19	F	6	L	6	8	14	9	
20	F	6	M	13	10	20	20	
21	M	6	H	5	5	4	5	
22	M	6	M	10	7	9	11	
23	M	6	L	4	6	5	15	
24	M	6	M	18	22	28	30	
25	M	6	M	50	29	50	50	
26	F	6	H	15	8	13	16	
27	M	6	M	13	8	9	12	

<sup>a/</sup>When the I.Q. was not available, general ability was designated as follows: high--H; medium--M; low--L.

Table 5. Galvanic Skin Response Readings of Children in Grade Two on June 4, 1952

Case Number	Sex M-F	Age in Years	I.Q. <sup>a/</sup>	Readings			
				8:45 A.M.	11:45 A.M.	1:30 P.M.	3:15 P.M.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	M	8	M	20	18	6	19
2	M	8	H	12	17	28	25
3	M	8	M	13	13	11	16
4	M	8	H	35	25	13	18
5	M	8	M	25	13	14	7
6	M	9	M	30	26	15	24
7	M	8	M	27	13	12	8
8	M	7	H	28	20	15	24
9	M	8	H	20	33	12	22
10	M	7	H	13	24	25	20
11	M	8	L	38	25	29	33
12	M	8	L	24	13	7	6
13	M	9	M	39	40	41	13
14	F	8	H	22	29	15	25
15	F	8	L	18	15	17	12
16	F	8	M	5	5	11	10
17	F	8	M	6	10	5	5
18	F	8	M	10	10	3	5
19	F	8	L	14	10	11	13
20	F	8	M	22	20	13	21
21	F	8	M	8	6	6	9
22	F	8	L	11	12	15	15
23	F	8	M	13	13	11	9
24	F	8	H	42	50	25	30
25	F	8	H	11	7	12	6
26	F	8	H	3	5	7	6
27	F	7	H	35	25	25	25

<sup>a/</sup>When the I.Q. was not available, general ability was designated as follows: high--H; medium--M; low--L.

Table 6. Galvanic Skin Response Readings of Children in Grade Three on June 18, 1952

Case Number	Sex	Age in Years	I.Q. <sup>a/</sup>	Readings			
				8:45 A.M.	11:45 A.M.	1:30 P.M.	3:15 P.M.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	M	9	M	15	15	36	50
2	F	8	M	10	7	8	9
3	F	8	M	10	8	9	6
4	M	8	M	11	7	14	12
5	M	8	L	33	31	50	42
6	M	9	L	8	6	14	11
7	M	8	M	28	12	9	13
8	F	8	M	9	13	29	32
9	M	9	L	13	12	11	15
10	M	8	M	10	7	10	21
11	M	8	M	24	23	25	24
12	F	9	M	10	15	40	19
13	M	9	L	34	8	13	15
14	M	8	L	31	17	21	19
15	F	8	M	7	40	31	24
16	F	8	M	6	13	19	13
17	F	8	H	4	4	8	7
18	M	8	M	13	20	13	15
19	F	8	M	19	20	6	25
20	M	8	M	6	9	7	9
21	M	9	L	18	11	11	17

<sup>a/</sup>When the I.Q. was not available, general ability was designated as follows: high--H; medium--M; low--L.

Table 7. Galvanic Skin Response Readings of Children in Grade Four on June 2, 1952

Case Number	Sex	Age in Years	I.Q. <sup>a/</sup>	Readings			
				8:45 A.M.	11:45 A.M.	1:30 P.M.	3:15 P.M.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	M	9	116	9	18	15	32
2	M	9	113	10	10	5	9
3	F	9	111	21	31	19	20
4	F	10	101	3	3	3	3
5	M	11	90	2	3	4	3
6	F	9	107	14	5	6	6
7	M	9	106	5	6	6	5
8	M	10	104	66	7	9	9
9	F	9	112	6	9	7	10
10	M	10	102	29	40	42	37
11	F	9	119	7	12	12	14
12	F	10	103	19	22	18	8
13	M	9	110	21	20	17	20
14	F	9	104	23	17	44	29
15	F	9	114	4	4	4	7
16	M	10	106	20	5	13	23
17	M	10	112	9	13	11	19
18	F	9	125	8	11	18	22
19	M	9	107	4	4	8	6
20	F	10	104	9	15	23	6
21	F	9	118	7	6	6	4
22	M	9	104	7	29	11	16
23	M	10	112	34	48	39	42
24	F	9	112	10	24	37	29
25	F	9	138	8	5	9	5
26	F	9	H	6	18	12	14

a/When the I.Q. was not available, general ability was designated as follows: high--H; medium--M; low--L.

Table 8. Galvanic Skin Response Readings of Children in Grade Five on May 28, 1952

Case Number	Sex	Age in Years	I.Q. <sup>a/</sup>	Readings			
				8:45 A.M.	11:45 A.M.	1:30 P.M.	3:15 P.M.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	M	11	98	6	7	10	9
2	F	10	115	7	4	3	4
3	M	10	106	12	3	33	25
4	F	10	97	10	20	13	14
5	F	10	99	7	15	6	6
6	M	10	94	7	14	15	8
7	M	10	104	24	30	25	20
8	F	10	118	18	32	30	19
9	M	11	106	14	16	11	8
10	F	10	108	7	20	7	5
11	M	11	106	11	16	14	6
12	F	10	114	7	10	12	6
13	F	10	99	19	14	23	10
14	M	10	110	7	7	13	17
15	M	10	114	9	9	10	11
16	F	10	103	19	50	47	50
17	M	10	M	31	33	31	26
18	F	10	105	15	33	32	32
19	F	10	120	-	28	10	12
20	M	10	104	4	6	6	7
21	M	11	105	6	9	7	11
22	F	10	99	5	10	5	4
23	F	10	103	277	40	30	34
24	F	10	115	17	43	24	26
25	F	10	101	8	8	10	15
26	F	10	114	11	7	10	9
27	M	10	113	11	19	50	25
28	M	12	M	15	43	6	11
29	M	12	L	20	34	19	15
30	F	10	M	29	27	34	20
31	M	10	M	11	10	10	15

<sup>a/</sup>When the I.Q. was not available, general ability was designated as follows: high--H; medium--M; low--L.

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