

A STUDY OF THE SLEEP

OF YOUNG CHILDREN

by

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B. S., Kansas State Agricultural College, 1924

A THESIS

submitted in partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE

KANSAS STATE AGRICULTURAL COLLEGE

1925

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Foreword

This investigation was possible because of a cooperative arrangement between the Kansas State Agricultural College and the Merrill Palmer School of Detroit, Michigan. The writer is greatly indebted to Helen Thompson Woolley, Ph. D., assistant director of the Merrill Palmer School, under whose direction the data were secured, and in whose name the questionnaires and schedule blanks were sent out. Much credit is also due the entire Nursery School Staff, for interest and aid throughout the gathering of the data. A deep obligation is due Doctor Lois H. Meek of The American Association of University Women for arranging for certain groups of mothers in that organization to furnish data regarding their children. The writer also wishes to express her appreciation of the inspiration and assistance which she has received from Doctor Margaret M. Justin, Dean of the Division of Home Economics at the Kansas State Agricultural College. Last, but far from least, she is indebted to the mothers who so kindly and carefully kept records and filled out questionnaires. Without their cooperation this study could not have been made.

Introduction

The importance of the period of childhood has been a matter of note for centuries past. Such phrases as, "Bring up a child in the way he should go.....," and, "As the twig is bent, so the tree is inclined," show the stress placed on this period by the Hebrews over two thousand years ago. A survey of the history and literature of the Greeks and Romans presents a similar picture.

With the growth of scientific knowledge in the past two centuries a wealth of information has been collected concerning factors affecting the child. Rousseau (1712-1778) focused attention on the understanding of the individual child, thus approaching the biological aspects of the problem. Itard (1775-1838), Seguin (1812-1880), Montessori (1870-), and others, have made untold contributions to the science of the education and the management of young children. Binet (1857-1911), sought to measure their intelligence, and Kuhlmann and others are adding to that work. Scientists have studied the physical needs of the child, and eugenicists have stressed the importance of his heredity.

Despite all of this work, it is only the last four or five years that a consciousness of the importance of these

years between two and five has been awakened.

The nursery school, which perhaps best epitomizes the effort to treat scientifically the mental, physical, and social needs of the preschool child, had its origin in England, Robert Owen, in 1799, established the first nursery school in an effort to aid the mill children of New Lanark. Although the movement has at times waned, there have always been pioneers who have kept the spirit alive. Within the last decade the Education Act of 1918, providing state aid for nursery schools, was passed, giving the movement new impetus. Training schools for nursery school superintendents have been opened, and England now has no less than twenty-six established nursery schools.

In this country, the Merrill Palmer school has probably led the way in furnishing the most desirable environment for the child, and in coordination the best efforts of the psychologist, nutrition specialist, and the student of home conditions, for the good of the child. Space does not permit the mention here of all those who are taking scientific interest in the preschool child. Harriet Johnson of the Bureau of Educational Experiments, Doctor Arnold Gesell of Yale, Doctors Baldwin and Stecher of the University of Iowa, have made noteworthy studies. Colleges and universities are establishing nursery schools, both as contributions to child care, and as laboratories for study. Groups organized with-

in the American Association of University Women, as well as certain other women's clubs, are making careful studies of the preschool child.

Though these efforts are truly noteworthy, the problems in this field which need further study are almost innumerable. Among those on which very little work has as yet been done is that of sleep. It was to obtain a more accurate knowledge of the sleep and sleeping habits of young children that this investigation was undertaken.

Historical

A survey of the literature indicates that the value of sleep was felt hundreds of years before any attempt was made to study it either in the abstract or as related to physical well being. Norse mythology, for example, tells of Brynhild, who was stung to her sleep by a sleep thorn, and Greek mythology tells of Ovid who exalts sleep thus: "Sleep, thou repose of all things, thou gentlest of the deities, thou peace of the mind from which care flies; who dost soothe the hearts of men wearied with the toils of the day and refittest them for labor."

The following excerpts, chosen at random, seem to be representative of the attitude towards sleep of philosophers and poets up to the nineteenth century:

"Do not go to sleep early and rise late."--Hindoo.

"He who sleeps alone keeps long cold; two soon warm each other."--German.

"One hour's sleep before midnight is better than two after."--French, German.

"Those who come from labor and exercise sleep more sweetly than the inactive and effeminate."--Alexander.

"Who goes fasting to bed will sleep but lightly."--Dutch.

"Sleep that knits up the ravelled sleeve of care."--Shakespeare.

In the nineteenth century, however, scientists began to seek experimental proof for the more or less stereotyped and arbitrary statements of the preceding centuries. These investigators confined themselves chiefly to efforts to arrive at tenable theories of sleep, or to studies of its physiology, pathology, hygiene, and psychology.

Kohlschutter, for example, in 1869, published "Die Mechanik des Schlafes" in the *Zeit. für rational Medicine*. This paper presented an attempt to measure the intensity of sleep by the intensity of sound necessary to waken the sleeper.

Johann Blumenback (1752-1840), observed that during sleep the human brain became pale and shrunk from the sides of the cranium. Arthur E. Durham (1869) made similar studies on a dog.

Studies of the flow of blood during sleep, with results similar to those of Blumenback are recorded by Angelo Mosso (1846). Doctor William A. Hammond and Doctor Silas Weir Mitchell (1866), Ehrmann (1877), Salathe (1877), Francois Franck (1877), and others. Pfluger published his "Theorie des Schlafes" in Pfluger's Archives in 1875.

Work of this nature is still being done. Pavlow, in 1923, presented his theory of sleep, and still other work remains to be published.

All of this is very important and very helpful, but the type of study which ascertains the number of hours of sleep which the preschool child needs, or which describes the factors affecting his sleep seems to have been almost wholly neglected. Terman and Hocking (1913) have made a study of 2,692 school children, but they did not secure data on children younger than six years of age. Pediatricians and child care specialists frequently give schedules of sleep for young children, but a study of these reveals gross disagreements, and little evidence upon which to base conclusions.

Experimental

The plan at the outset was to study the psychological aspects of the sleep of young children. When it was found that no systematic study had been made of the hours of sleep

of young children, an effort was made to secure data on this point. Blanks were made for recording the hours of sleep of the children and these were sent to all mothers of Merrill Palmer nursery school children. Later, the same mothers were asked to fill out questionnaires dealing in detail with the nature and problems of the sleep of these children. These were filled out by the majority of mothers of children who were attending the Merrill Palmer school in January 1925. Later, through the cooperation of Doctor Lois H. Meek, both types of information were secured from mothers in certain study groups of the American Association of University women.

The sleeping schedule included space for the following information:

1. Hour of going to bed at night.
2. Hour of going to sleep at night.
3. Hour of waking in the morning.
4. Wakeful periods during the night.
5. Length of nap.

The questionnaire had three major divisions:

1. Facts regarding the child's sleep.
2. Methods of avoiding sleep.
3. Methods of inducing sleep.

Although it is now evident that certain changes in form

and arrangement would have made for more concise answers, copies of the original blanks are included in this report. Some of the questions yielded answers which were so varied in form as to be exceedingly difficult to tabulate, or to interpret. These have not been included in this paper.

A summary of the hours of sleep recommended by fourteen writers in pediatrics, psychology, or child care, is given on page 20. Table I shows the hours of sleep actually taken by the children studied in this investigation. Other results of this study are presented in Tables II - XI.

The Merrill Palmer School
71 Ferry Avenue, East
Detroit, Michigan

To the Mothers of the Merrill Palmer Nursery School

Children:

We are very eager to find out how many hours normal children really do sleep, a subject regarding which there is at present little accurate information. We are therefore asking if you will be so good as to fill in the following blanks for the week beginning Sunday, December 7th, and ending Saturday, December 15th.

Will you fill in the actual hour of going to sleep, as accurately as you can, and the hour of waking; also the duration of any wakeful periods during the night, and the duration of the afternoon nap or any other period of sleep, when not in school?

	S	M	T	W	T	F	S
Hour of going to sleep	:	:	:	:	:	:	:
Hour of waking	:	:	:	:	:	:	:
Wakeful periods (duration of)	:	:	:	:	:	:	:
Afternoon nap or any pe- riod of daytime sleep	:	:	:	:	:	:	:

Will you be so good as to return this sheet Monday, December 17th, or as early as possible in the week as we are anxious

to get this information.

Thanking you for your cooperation, I am,

Very sincerely,

Helen T. Woolley

December 3, 1924.

MERRILL PALMER SCHOOL

QUESTIONNAIRE

Name of child:

Date of birth:

Name of parents:

Address:

I. Facts regarding the child's sleep.

A. Would you, or would you not say that this child sleeps well?

1. If so, has this always been true? Describe any periods of difficulty giving apparent cause and methods of overcoming difficulty.

2. If he is not a good sleeper, give origin and history of the trouble in detail, e.g., did it start after an illness, period away from home, temper tantrums, or what?

B. Does he go to bed at a regular hour?

1. If so, when?

2. If not, give approximate hours.

C. Usual routine of going to bed, - bath first, story, play- give in detail.

1. How long does this take?

2. How long after going to bed does it take him to go to sleep?

D. Physical conditions of sleep - be specific.

1. One or more windows open - how much?
2. Light in room? In hall with door open?
3. Kind of sleeping garment - underwear, nightgown, pajamas, flannel in winter - describe.

a. Have you known a time when sleeping garment was too small or in any way interfered with sleep? Give incidents in full.

4. Companions - does he sleep.

a. In bed alone?

(1) If not, with whom does he sleep - father, mother, brother, sister, nurse, or whom?

(2) If alone, at what age did he begin, and what were the objections at first: afraid, cold, want dolls, etc.; and how were they overcome?

b. In room alone?

(1) If not, with whom - father, mother or both, brother, sister?

(2) If so, at what age did he begin and what problems arose?

(3) Does he now ever request company?
What do you do?

E. Personal habits connected with sleep.

1. Does he go to sleep in any characteristic position? Describe.
 - a. Does interference with this interfere with sleep? Give incidents.
2. Regular method of going to sleep - with doll, sucking thumb or finger or rubbing part of body as ear, hair, or sex organs?
 - a. Continued during night or abandoned when asleep?
 - b. Does above seem to be necessary to going to sleep?
 - c. At what age did above begin?
 - d. Have you interfered in any way as tying hand, wrapping finger, or pinning arm down etc.?
 - (1) With what results and did he go to sleep another manner - how?
3. Toilet habits during sleep.
 - a. Do you take him or does he get up himself?
 - (1) How many times?
 - b. Does he wet the bed - occasionally, frequently, every night? Be specific.
 - (1) What measures have you taken to remedy it, and with what success?

F. Facts about getting up.

1. Does he waken in the morning or do you waken him?
At about what hour?
 - a. If you waken him, how do you do it - calling, knocking on door, taking him up?
2. General disposition on waking?
3. Object to getting up? - want to play, lie in bed or what? What do you do?
4. If he wakens before rest of family, give procedure - get in bed with mother or father, play with toys talk to himself, or what?
 - a. Does he get out of bed himself to get own toys or does mother, nurse or someone get up with him?

G. Illnesses affecting sleep

1. Describe digestive disturbances or other illnesses that have interfered with sleep - duration, procedure regarding sleep.

H. Nap

1. Does he take a daytime nap? Regularly?
2. Morning or afternoon?
3. How long?

I. Facts regarding light in room

1. If he does not have one now, at what age was it abandoned?

2. If he has one, does he demand it?

Give reasons - afraid of dark, of bears, bogie man etc.? What do you think caused these fears?

3. What do you do - leave light, stay with him, give toy etc.?

4. Are you afraid of the dark? Is any member of his family - brother, sister, nurse etc. afraid?

5. Has he any other fears connected with sleep - fear of shadows, of being alone etc.?

a. Have you done anything to allay these fears?

If so, what, and with what result?

II. Methods of avoiding sleep.

A. Objections to going to bed - made regularly, occasionally?

1. Of what nature - want to play a little longer, hide, ask for drink, for toilet, object to being alone, or just for argument?

2. How manifested - start long piece of work or play, cry, scream, become angry, beg, or just what?

a. At what age did he begin objecting?

(1) Origin - fright, illness, having someone with him?

b. What do you do - give drink, stay with him, etc.?

- c. How long does this procedure last?
 3. After such difficulty do you ever let him stay up till you go to bed? How often?
 4. Does he stay in bed after going? Always?
 - a. If not, what reason does he give for getting up?
 - b. What do you do - take him back to bed, punish, spank, etc. - be specific.
- B. Nature of sleep.
1. Quiet or restless - does he thrash about and get uncovered?
 2. Does he cry out or talk in sleep, or seem to have had dreams or nightmares? Give in detail, including any dreams he has told you.
 - a. What do you say?
 3. Does he ever walk in his sleep?
 - a. How frequently?
 - b. Does he leave his own room? If so where does he go?
 - c. What do you do, waken him, punish him, or put him back to bed with or without waking?
 4. Does he sleep all night or have wakeful periods?
 - a. What time in night?
 - b. Duration?

- c. Apparent cause?
- d. What does he do - ask for toilet, drink, or to get in bed with someone, or what?
- e. What do you do, get up, take to toilet, get drink, scold etc.?

III. Methods of inducing sleep.

A. Do you definitely try to avoid issue by coaxing, waiting till he is ready, promising candy, toys, etc.?

B. Definite Methods

1. How do you get him to sleep? Lie down with him, leave room, rock him, say you will punish, stroke face or any part of body, hold hand, read, tell a story, sing - be specific.
2. What method seems to be best?
 - a. How long do you do it?
 - b. How long does it take him to go to sleep this way?
3. Are there times when all these fail?
 - a. Apparent reason?
 - b. What do you do?
4. Do you ever tell him that you know he is giving excuses: not really needing toilet, not really thirsty etc.? Give specific incidents.
5. Does he ever insist that he has not slept? What does he say?

- b. What do you say?
6. Does he object to afternoon nap?
- a. How - say he is too big, not sleepy, etc.?
- b. What do you do?
- c. Do you put him to bed whether he sleeps or not?
7. Any other methods - give in full.
8. Any other methods - give in full.
- C. If you do not take charge of the matter of sleep, who does - other parent, brother, sister, aunt or who?
1. With greater or less success in getting to bed? To sleep?
- D. Do you think the child really has trouble going to sleep, or is the difficulty just a behavior problem?
- E. Does lack of sleep seem to be affecting health? How?
- F. How important do you think sleep is in the life of a child?

Name of person filling out questionnaire

Hours of Sleep Recommended by Various Authors

(Given for purposes of comparison)

Age	Dansgill ¹	Lucas	Dum	Maccarthy	Holt	Read ⁵	Forbush	Drummond	Elaperide	Kerr	Washburne ⁴	Graetzer	Oppenheim	Griffith	Range	Mean
1-2 years:	:13 hours	:12 hours	:15 hours	:14-15 hrs	:14 hours	:14-16 hrs	:12-14 hrs			:11-12 hr	:14 hours	:10 hours	:14 hours	:15-16 hrs	:10-16	:13.4
2-3 years:	:12 hours	:12 hours	:13-14 hrs	:13-14 hrs	:14 hours	:14-16 hrs	:12 hours			:11-12 hr		:10 hours				
3-4 years:	:12 hours	:12 hours	:13-14 hrs		:14 hours	:14-16 hrs	:12 hrs.			:11-12 hr	:11-12 hrs	:10 hours				
4-5 years:	:12 hours	:11 hours	:12 hours	:12-13 hrs		:13 hours	:14-16 hrs	:12 hours		:10-11 hr						
5-6 years:	:12 hours	:11 hours		:12-13 hrs		:13 hours	:14-16 hrs	:12 hours	:11-12 hr	:10-11 hr			:10-11 hrs	:10-16	:12.6	
											: 9 hours				: 9-16	:12.2

1. For complete references see Literature Cited.
2. Table taken from O'Shea and Kellogg: Building Health Habits.
3. Table taken from F. Truby King: Feeding and Care of Baby.
4. Table taken from Preyer: The Mind of the Child.

Table I

Average Duration of Sleep
at Different Ages

Age	: Total Sleep:	: Nap
Under 18 months	:15.08 hours:	: 2.65 hour
18-24 months	:13.33 hours:	:1.86 hours
2-2½ years	:12.81 hours:	:1.62 hours
2½-3 years	:12.81 hours:	:1.58 hours
3-3½ years	:12.56 hours:	:1.85 hours
3½-4 years	:12.43 hours:	:1.55 hours
4-4½ years	:11.95 hours:	:1.23 hours
4½-5 years	:12.01 hours:	:1.40 hours
5-5½ years	:11.71 hours:	:2.71 hours
5½-6 years	:11.00 hours:	: .95 hours

Table II

Sex Differences in Amount
of Sleep Taken

Age	Total sleep in hours	
	Male	Female
1-2 years	14.46	12.98
2-3 years	12.56	12.96
3-4 years	12.45	12.70
4-5 years	11.91	12.05
5-6 years	10.50	12.50

Table III

Ventilation

Age	Cases	Number of open windows		
		One	More than One	None
1-2 years	11	8	2	1
2-3 years	21	14	5	2
3-4 years	30	22	7	0
4-5 years	40	26	11	3
5-6 years	14	7	6	1
6-7 years	4	3	1	0
Total	120	80	32	7
		66.6	26.6	5.8

Table IV
Sleeping Companions

Age	Cases	Bed Alone	Room Alone
1-2 years	11	11	7
2-3 years	21	17	4
3-4 years	30	30	7
4-5 years	40	37	9
5-6 years	14	13	6
6-7 years	4	4	3
Total	120	89:74.1	59:49.1

Table V
Incidence and Nature
of Sleep Problems

Age	No. of Cases	No. of Problems	Psychological	Physical
6 months-				
2 years	11	0		
2-3 years	21	3	1	2
3-4 years	30	3	2 ¹	
4-5 years	40	5	1	4
5-6 years	14	3	2	1
6-7 years	4	0		
Total	120	14	6	7

1. No reason was given as the probable cause of the third problem.

Table VI
Facts About Getting Up

Age	Cases	Have to be wakened	Good Disposition	Objections to Getting up
6 months-				
2 years	11	0	11	0
2-3 years	21	3	20	1
3-4 years	30	5	21	6
4-5 years	40	10	36	11
5-6 years	14	2	12	2
6-7 years	4	0	4	2
Total	120	20:16.6%	104:86.6%	22:18.3%

Table VII
Thumb Sucking

Age	Cases	Thumb Suckers	%	Had Sucked thumb	%	Av. Age Begun
6 months-			54.0			
2 years	11	6		0	0.	6 mo.
2-3 years	21	2	9.5	4	19.	3 mo.
3-4 years	30	6	20.0	5	16.	6 mo.
4-5 years	40	6	15.0	8	20.	8.6mo.
5-6 years	14	3	21.0	4	28.	2 mo.
6-7 years	4	0		2	50.	2.5mo.
Total	120	23	19.1	23	19.1	5.7mo.

Table VIII
Toilet Habits

Age	Cases	Wets			Taken to Toilet	Gets up Himself	Av. Times Per Night
		Regularly	Occasionally	Rarely			
6 months-							
2 years	11	5	1		3	1	2
2-3 years	21	4	3	4	13	2	1.5
3-4 years	30	3	8	3	15	4	1.19
4-5 years	40	5	4	5	23	7	1.28
5-6 years	14	0	2	2	9	1	1.16
6-7 years	4	1	0	1	1	3	1.
Total	120	18	15	15	64	18	1.33

Table IX

Fears

Age	Cases	Fears relat- ed to Sleep	Have Night Light	Other Fears
6 months-				
2 years	11	0	0	1
2-3 years	21	2	5	1
3-4 years	30	11	8	6
4-5 years	40	15	7	4
5-6 years	14	4	3	2
6-7 years	4	3	1	2
Total	120	35	29	24
		29%	20%	13%

Table X

Dreams, Sleep Talking,
Nightmares, et Cetera

Age	Cases	Talk	Cry Out	Dream	Nightmare
6 months-					
2 years	11	1	3	0	0
2-3 years	21	3	6	1	0
3-4 years	30	7	7	4	0
4-5 years	40	6	6	6	1
5-6 years	14	2	3	4	1
6-7 years	4	0	1	1	1
Total	120	19	26	16	3

Table XI
Masturbation

Age	Cases	Masturbation
6 months-		
2 years	11	0
2-3 years	21	0
3-4 years	30	0
4-5 years	40	1
5-6 years	14	2
6-7 years	4	0
Totals	120	3
		$\frac{3}{120} = 2.5\%$

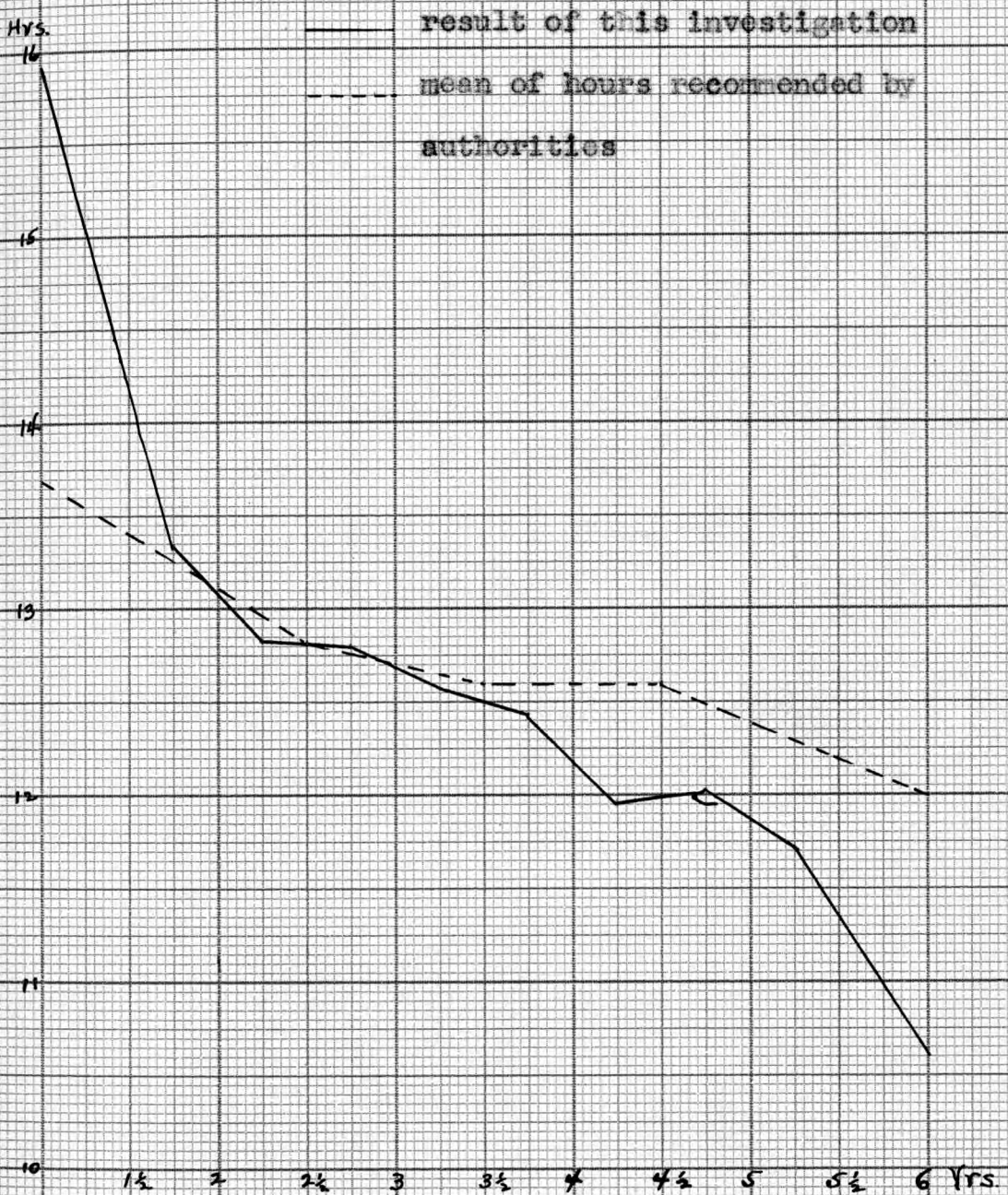


Figure 1

Hrs.

16

15

14

13

12

11

10

9

2

3

4

5

6

Yrs.

boys

girls

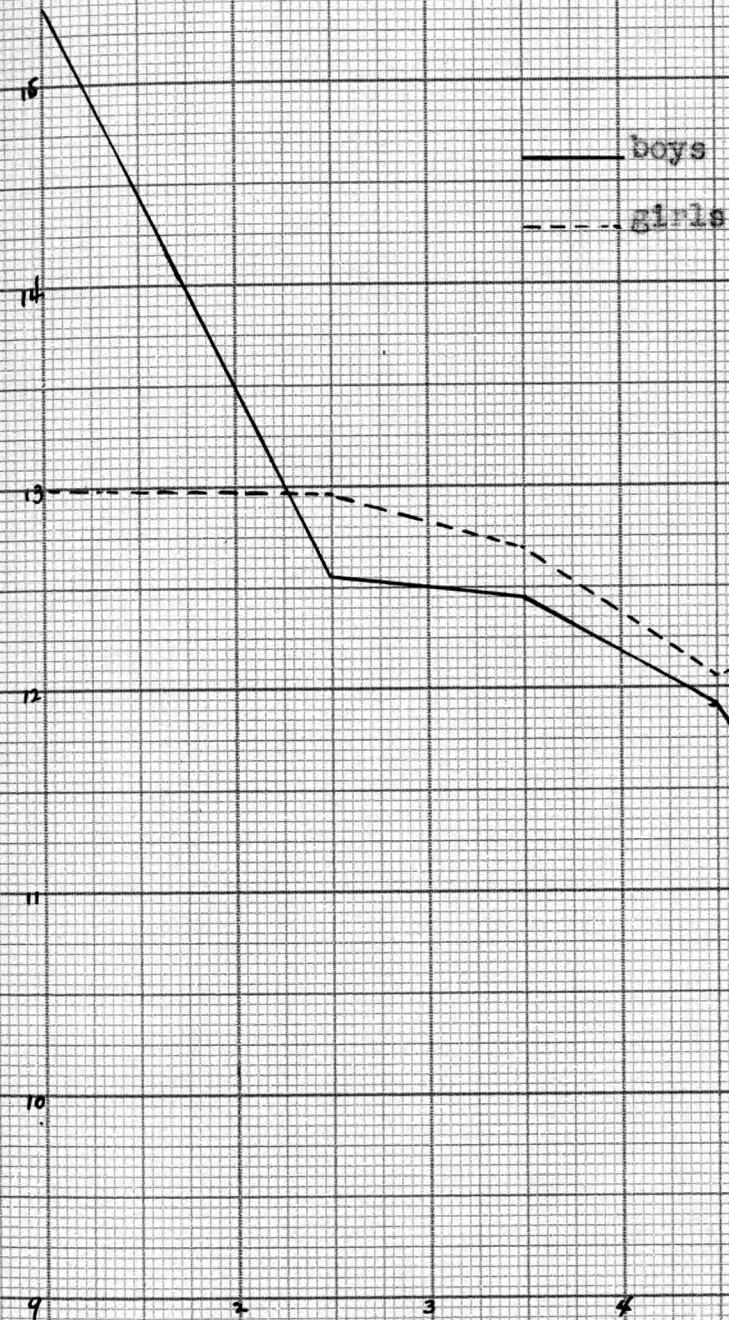


Figure 2

Sex Differences in Amount of Sleep Taken

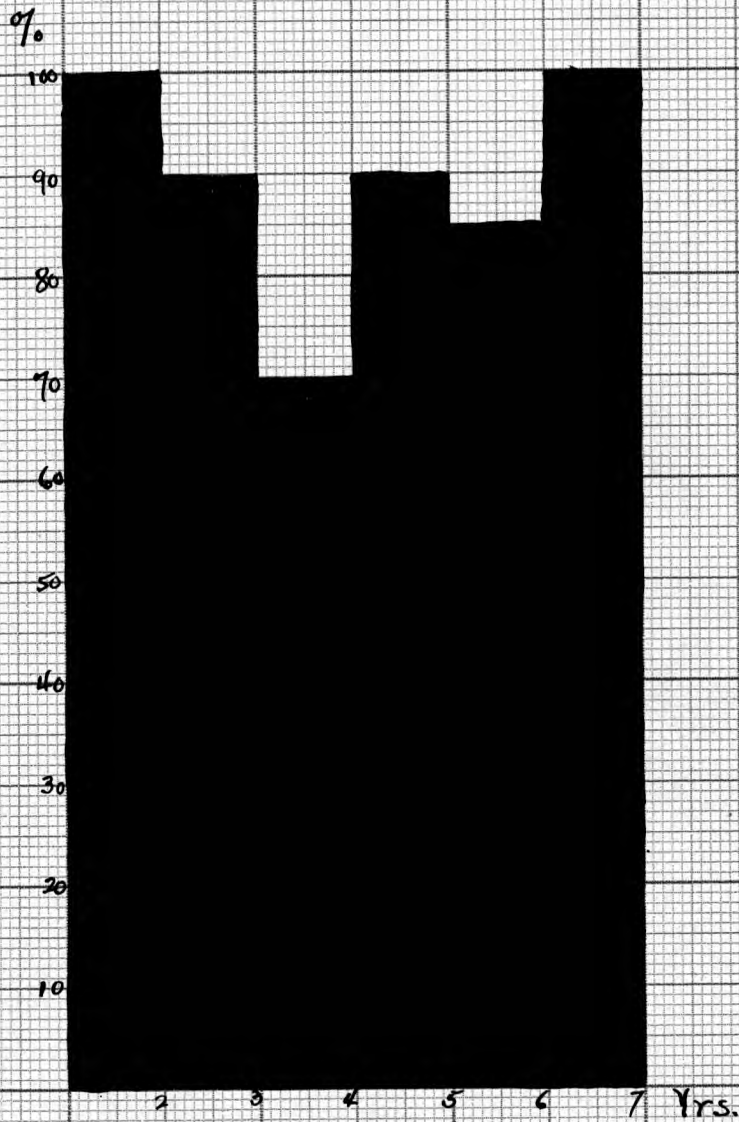


Figure 3

Percent of Children at Different Ages Which were Reported
as Having a Good Disposition on Waking in the Morning

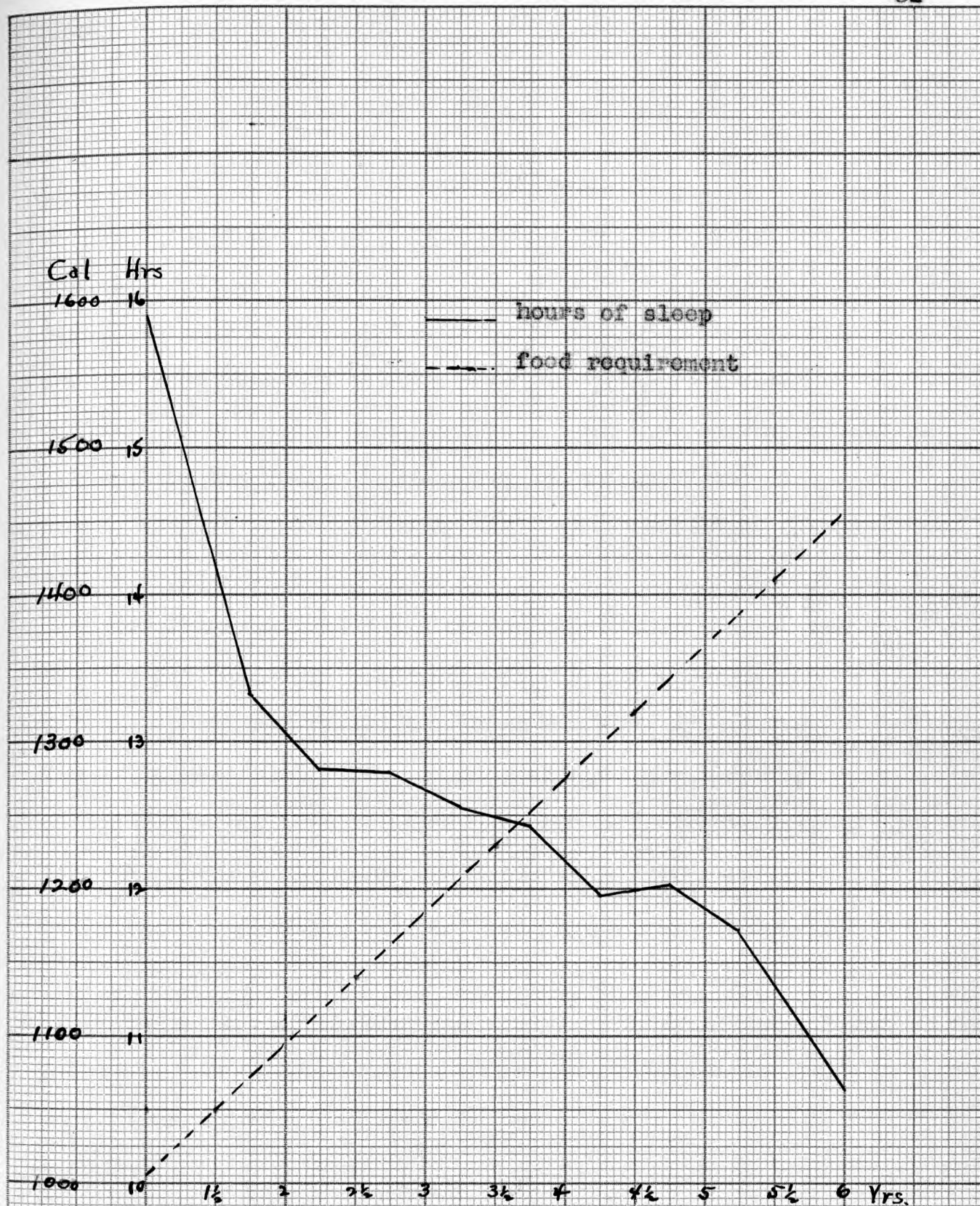


Figure 4

Comparison of Sleep in Hours with
Total Energy Requirement in Calories

Discussion

Table I shows that the children studied in this investigation decreased gradually in the amount of sleep taken between the ages of eighteen months, or less, and six years. The decrease seems to be most rapid in the period between eighteen months and two and one-half years, to remain fairly constant in the period between two and one-half and four years, then to drop rapidly in the last period, that between four and six years.

The length of nap shows an analogous decrease. These figures however, were taken only from those children who took naps, without regard for those who were reported as having no nap. Up to two and one-half years all of the children took at least a short nap, but between the ages of two and one-half and three years twenty per cent of the children took no naps, between three and three and one-half years fourteen per cent, between three and one-half and four years twenty per cent, four and four and one-half years fifty per cent, four and one-half and five years thirty-one per cent, five and five and one-half years eighty per cent, and between five and one-half and six years fifty per cent of the children took no nap.

Comparison of the hours of sleep taken by the children studied in this investigation with the mean of the hours

recommended by fourteen writers in pediatrics, psychology, and child care shows comparable results up to the age of four. Beyond that, the recommended sleep seems to be somewhat in excess of the amount actually taken by the children under observation; for example, the latter slept an average of 11.98 hours during the fifth year, as compared with the mean recommendation of 12.6 hours, and during the sixth year the observed group slept 11.55 hours, as compared with the mean recommendation of 12.2 hours. Further examination of the various schedules shows that the range of hours recommended by authorities extends from ten to sixteen hours up to the sixth year, and from nine to sixteen hours during the sixth year. The results of this investigation, on the other hand, indicate that a child under six years needs more than nine or ten hours of sleep, and that a child older than two years will probably not sleep sixteen hours. Therefore, the writer is of the opinion that, while a sliding scale will cover various individual cases which are exceptions to the rule, it might under most circumstances prove misleading.

Table II shows the hours of sleep of the children studied, tabulated according to sex. While these figures do not include enough cases to justify definite conclusions, they would indicate that the hours of sleep for girls tend to remain constant during these ages, (varying only .48 hours) whereas those for boys decrease quite markedly (3.96

hours) between the ages of one and six years. As a result, girls sleep about 1.48 hours less than boys during the second year, and about two hours more than boys during the sixth year.

Two thirds (66.6%) of these children (Table III) have one window in the room open at night. The answer in most of these cases was "one window open, width varying with weather". About one fourth (26.6%) have more than one window open and 5.3% have no window or door open. Many of these reported "natural ventilation."

Table IV shows that approximately three fourths (74.1%) of the children sleep in a bed alone, but only half (49.1%) of them sleep in a room alone. In many cases, lack of room was mentioned as making it impossible to give the child a room of his own. Others explained that he shared a room with the other children in the family.

For the purposes of this study, only those cases which were established problems with regard to sleep were listed as "problems." A considerable number of mothers reported periods of difficulty during teething, after weaning, after an illness, or some other irregularity in the regime. Table V shows the number and incidence of the established problems. Our observations show that the largest number falls in the fifth year, and that there is about the same number of problems of psychological as of physical origin. Indeed,

the two factors are so closely related that it was difficult in some cases to decide in which group the case should fall.

The inadvisability of waking children in the morning has been stressed by Holt (1918), Lucas (1923), Emerson (1923), and others. Table VI shows that only 16.6% of these children have to be awakened, even occasionally. If a child is considered to have had enough sleep then he wakes himself, then about 84% of these children may be regarded as normal sleepers, and the hours of sleep taken by these children may therefore be taken as somewhat indicative of the hours of sleep taken by normal children. The fact that 86.6% were reported as waking in good spirits would also point toward this interpretation. It will be seen that the greatest incidence, both of children who have to be waked, and of children who object to getting up, falls again in the fifth year.

Although no attempt was made to study nervous habits per se, they were thought to be so closely related to sleep as to warrant the inclusion of questions regarding them in this questionnaire. Tables VII-XI, inclusive, present a tabulation of the information secured on this phase of the problem. No cases of somnambulism were reported, although there were some cases of talking and crying out during sleep, and also of dreams (Table X). Most mothers reported efforts to break the habit of thumb-sucking. Adhesive tape

received most mention as a successful means of breaking the habit, while aluminum mits or sewing the sleeves of the sleeping garment came next in order.

It seems to the writer that the number of cases of enuresis (see Table VIII), is sufficiently large to cause concern among those who are interested in the early outgrowing of infantile habits and the establishment of the independence of the individual. As to masturbation, it is probable that only those cases which were well established as habits were reported in this questionnaire because of the difficulty of discussing this subject impersonally. Because of this, these figures are probably no indication of the occurrence or non-occurrence of this habit in preschool children.

Conclusions

1. The hours of sleep of young children decrease rapidly with increasing age. The length of nap seems to decrease at a rate comparable to that of total sleep. An afternoon nap seems to be the rule up to the age of two and one-half years, after which an increasing number of children do not take naps, so that at the age of five or six fully one-half of the children have no nap. The important role that sleep probably plays in normal physical and mental development indicates that age, more than any other factor, should serve to regulate the number of hours which the child

spends in sleep.

2. Sex differences in amount of sleep seem to be differences in rate of decrease with increasing age, rather than a constant difference in amount of sleep taken.

3. Difficulties with regard to sleep seem to be most prevalent during the fifth year, suggesting a very careful management of the child between the ages of four and five, when his personality is becoming more complex, and physical and environmental factors are more likely to disturb his sleep.

4. Infantile habits, such as thumb sucking and bed wetting, are often prolonged into the fifth or sixth year. It would seem that greater effort should be made to abolish these habits because of their undesirability in themselves, and because of the danger of untoward effect on both the personality and the physical development of the child.

Literature Cited

- Claparede, Edouard.
1911. Experimental Pedagogy and the Psychology of the Child. Longmans, Green and Co., New York.
- Dansdill, Theresa.
1924. Health Training in Schools. National Tuberculosis Association, New York.
- Drummond, William Blackley.
1915. The Child, His Nature and Nurture. J. M. Dent and Sons., Ltd., London.
- Dunn, Charles Hunter.
1922. Pediatrics, the Hygiene and Medical Treatment of Children. The Southwork Co., Troy, New York.
- Emerson, William R. P.
1923. Nutrition and Growth of Children. D. Appleton and Co., New York.
- Forbush, William Byron.
1915. Guidebook to Childhood. American Institute of Child Life, Philadelphia.
- Graetzer, E.
1905. Practical Pediatrics. F. A. Davis Co., Philadelphia.
- Griffith, John Price Crozer.
1903. The Care of the Baby. W. B. Saunders and Co., New York.
- Holt, Luther Emmett.
1918. The Diseases of Infancy and Childhood. D. Appleton and Co., New York.
- Kerr, Le Grand.
1910. The Care and Training of Children. Funk and

Wagnalls Co., New York.

Lucas, W. P.

1923. The Health of the Runabout Child. The Macmillan
Co., New York.

Read, Mary L.

1917. The Mothercraft Manual. Little, Brown, and Co.,
Boston.

Terman, Lewis M. and Hocking, Adeline.

1913. The Sleep of School Children, its Distribution
According to Age, and its Relation to Physical
and Mental Efficiency. Journal of Educational
Psychology 4:138-147, 199-208, 268-281.

Washburn, Mrs. Marion (Poster).

1907. Study of Child Life. American School of Home
Economics, Chicago.