

BEHAVIOR DURING REST AND THE EATING PATTERNS
OF CHILDREN AT NURSERY SCHOOL

by

APRA MARGARET FERNANDES

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APPROVED:

Redacted for privacy

Assistant Professor of Family Life

In Charge of Major

Redacted for privacy

Head of Department of Family Life and Home
Administration

Redacted for privacy

Chairman of School Graduate Committee

Redacted for privacy

Dean of Graduate School

Date thesis is presented May 11, 1960

Typed by Afra Margaret Fernandes

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BEHAVIOR DURING REST AND THE EATING PATTERNS OF CHILDREN AT NURSERY SCHOOL

CHAPTER I

INTRODUCTION

Background of the Study

Over the years the eating patterns of nursery school children have been studied from various points of view. Some studies have dealt with what to feed preschool children and how best to present food (17), (18), (19). Others have reported on food intake of nursery school children at noon (5), (19), (21), and have described how children's response to food is different at nursery school than it is at home (13), (33). Considerable literature is also available on children's eating habits as having been learned from parents, siblings and/or other persons in their environment (7), (8), (13), (17). No study, however, has been found which takes as its focus the response of children to the lunch period in the nursery school as an indicator of the total day spent in the nursery school. The present study has this problem as its focus.

One of the major stumbling blocks to carrying out a study of this sort is the difficulty one encounters in obtaining a measure of the type of day the child has had at nursery school. One approach to the problem could involve an adult observing the child throughout the nursery school day, in terms of some particular frame of reference, to arrive at a measure of the type

of day the child has had. Such a procedure is uneconomical, however, and poses a number of methodological problems.

Another approach to measurement would be to look for some relatively constant, easily observable situation which reflects to some degree the kind of day the child has had, and observe this rather than the child's total day. Such an approach involves the assumption that the experiences of a child during a day are to some extent cumulative, and their cumulative nature is reflected in a child's behavior in particular situations. Since there is some evidence for the validity of this assumption (35, p.235), the question becomes one of identifying the situation at nursery school which would best reflect the child's previous experiences for that day.

For theoretical reasons, and for practical reasons, the rest period was selected as the most desirable situation to observe for this purpose. At the theoretical level it is thought that during rest external demands are minimized and the child's behavior is more a reflection of his internal feelings (1, p.279), (10), (28, p.150). At the practical level the rest period seemed to be particularly appropriate because of the constancy of the situation for the child, its convenience for observation, and its time and order relationship to the lunch period which immediately followed rest.

Purpose of the Study

The purpose of this study was to determine the relationship

between the kind of day a child had at nursery school and his response to food and the amount of food he consumed during the lunch period. Studies done so far on raising the food intake in children have concentrated on making the meal seem more attractive, on allowing children to serve themselves, or on adults' casualness and unprejudiced response to various foods (7), (17). If it were found that children's response to the lunch period and/or their eating patterns were based on the type of day they had at nursery school, one would have to approach the situation differently. Rather than focus on techniques such as those listed above, it probably would be more profitable to steer a child's activities in such a way as to bring the child to a relaxed and pleasant stage prior to the lunch period and thereby raise the likelihood of a more favorable response to the food and a higher food intake. For some children this "steering" would have to be done throughout the day; for others perhaps, only during certain periods of time in the day.

These comments are not intended to mean that steering of activities should assume all importance, regardless of the individuality of the child. They are intended, rather, only to point up a possible plan of procedure if a close relationship between type of day and food intake were found to exist. Such a program would have to be balanced with the positive effects of the frustrations a child meets in the course of his nursery school experience.

Hypotheses to be tested

Two hypotheses were tested in the study: (a) a child's response to food during the lunch period in the nursery school would not vary with the type of day the child had at nursery school, as this was reflected in the child's behavior during rest, and (b) the amount of food consumed during lunch in the nursery school would not vary with the type of day the child had at nursery school.

Importance of the Study

There is a growing body of literature which emphasizes the close relationship between food intake and mental hygiene (11), (15), (27), (29), (38). In a discussion of the work done jointly by nutritionists and psychiatrists at the Milwaukee Health Department, Poehler (24) explains how necessary it becomes for nutritionists to depend on psychiatry or mental hygiene in order to help public health nurses cope with the nutritional problems that confront them in the country. This Poehler feels could best be done by understanding the underlying causes not only of eating behavior, but of all behavior, for all behavior is related. Selling and Ferraro (29) proposed the term "psycho-dietetics" to indicate this close relationship between psychiatry and nutrition, and the need for more cooperation on the part of the two professions to attack adequately present nutritional problems. Breckenridge and Murphy (1) have captured this thinking

well when they talk about the need to consider the whole child and to be aware that he needs not just chemical vitamins but "psychological vitamins" as well.

The present study is seen as a step along these lines of investigation.

Review of Related Literature

Not a single study was found which related specifically to the hypotheses to be tested. A number of studies were found, however, which related somewhat indirectly to the problem, and these will be reviewed here.

Camp and Eppright (3) have studied factors affecting appetite and hunger in order to better understand and work with ever-present feeding problems. They summarized their study by stating that there was apparently no innate mechanism upon which human beings could depend as a guide in choosing food, and that the natural stimulation to eat afforded by hunger was easily thwarted by nutritional, physiological and psychological conditions. Breckenridge and Murphy (1) hold a slightly different view. They maintain that the immediate satisfaction of an infant's hunger is a stepping-stone to good eating habits in later life. The prompt satisfaction of his hunger conditions him to the natural sequence of hunger, ingestion of food, satisfaction and physical well-being.

There are quite a few studies describing children's eating habits as having been learned from parents and/or other persons in their environment. Waring and Johnson (34) say that practically

all eating behavior has been learned, for the most part unconsciously in the family as children learn to speak the language of their parents. This point of view is supported by McCay, Waring and Kruse (19) who believe that the attitude of adults would be more helpful to children if they kept in mind that eating behavior and appetite are partly the results of children's learnings. In a discussion of appetites and attitudes that affect or influence the feeding of young children, Wagner (33) opines that it is not so much the food, but the pattern we build around eating, that brings about a strong like or dislike of a particular food in a child.

Another contributory factor to a successful eating pattern, as pointed out by Ilg (13) is how and where a child eats. In speaking about the child's eating at school, McCay, Waring and Kruse (19) explain that it is but natural for a child to feel a little uneasy or unable to perform as he does at home, particularly if the relationship with the teacher and the other children at his table is an entirely new social experience.

In a study undertaken to investigate the influence of the food preferences of the father on those of his preschool child, Bryan and Lowenberg (2) found that it was difficult to measure this relationship because the child of preschool age does not have as wide an experience with foods as does his father. In addition, the child's food preferences are not as well established. However, the father's main influence on his child's food preferences appeared to be in the limitation of the variety of food offered to

the child.

Faegre and Anderson (9) conclude that children cannot be expected to eat foods that others in the family refuse. Food fussiness is common with children. At one time tapioca pudding is their favorite dessert, at another they loathe it; they will not eat food that looks unfamiliar or is of a different texture or consistency from that which they are generally served. These reactions may or may not be influenced by adult attitudes but certainly they are not different reactions from those commonly exhibited by adults.

When children are being introduced to new foods, the experience probably should be such that their pleasurable feelings toward food are not disturbed. Some investigators point to a possible relationship between eating habits and the pressures which children experience around food. Gruenberg (12) says that it has been found by careful experiment that when adults treat all food without prejudice, without indicating strong feelings one way or the other, young children eat practically everything in good proportion. Metcalf (20) arrives at a similar conclusion. She feels that it does not pay to try to persuade a child to eat, for the less emotional or pressured the situation, the better appetite he will have. Foner holds an identical view. "The more we can reduce the pressures that surround our children's eating, the less trouble they and we will have...By pressing our children to eat, we impair and may begin to destroy, their pleasure in eating." (26, p.83).

Lowenberg (17) suggests that one of the most profitable contributory factors in the food consumption of a young child is for the adult to remain relaxed and unconcerned. It is essential, she feels, that adults be honest with children; that they let children know that they can understand and appreciate their dislike of certain foods. Parents may be more successful if they recognize and accept their children's individual likes and dislikes but are confident that children can and do learn to experiment with new foods. Children will succeed in eating foods they dislike when they are aware of adults' confidence in them.

To Wolf (36), (37) children's eating habits, to a large extent, are a product of the wisdom or lack of it, which has been exercised by mother or nurse. Faegre (8) reports that untold favorable response to food could be brought about if in their early years children could be presented with all kinds of foods never doubting their acceptance of and liking of them. In this manner, she feels, children could be made to spontaneously react favorably toward most foods.

Other studies concentrating on the effect of size and manner of food servings on the child's eating behavior serve as an impetus in changing adult attitudes toward children's feeding and mealtime behavior. Morse and Chittenden (23) conclude from a study of the effect of initial food servings on eating efficiency of preschool children, that when small amounts of food are served initially, the children have higher efficiency scores and eat more food. The pioneering study of Davis (4) approached the problem of

higher food intake and its nutritional adequacy by means of self-selection. She wanted to see what food habits children would develop if they were made to select their own diet from amongst a variety of wholesome foods. For her experiment she chose three babies, 8 to 10 months old, who until then had only had breast milk. At each meal a nurse would place before the babies six or eight serving dishes of vegetables, fruits, eggs, cereals, meats, whole-grain bread, milk, water and fruit juices. The nurse waited until the baby indicated which dish he wanted. She then gave him a teaspoonful of the dish he chose and waited for him to make his next choice. From this experiment and many others that followed it, Davis has concluded that children, over a period of time, tend to eat what is best for them if they are given an abundant choice of wholesome foods.

Eating is not a mere mechanical task. It is closely bound with cultural and emotional factors (6), (15), (22), (25), (27), (38). While discussing the cultural and emotional values of food, Lee (16) indicates that the universal meaning of food includes more than mere nutrition. Giving a mother from the South Sea Islands as an example, she explains how in this case love, society and warmth would all be included in the first experiences of food. She adds that "some societies very definitely start from this total situation and build their social warmth and their social relations on the basis of the fact that food and warmth and social intercourse are one." (16, p.84). Read (28) also has

discussed how emotional disturbances affect appetite because of the close relationship between appetite and feeling.

CHAPTER II

DESIGN AND METHOD OF PROCEDURE

Overview

The study aimed to determine the relationship between the response to food and the food intake of preschool children and the type of day they had at nursery school, as this was reflected in their behavior during rest.

Subjects

Sixteen out of the eighteen children enrolled at the Park Terrace Nursery School during the winter quarter of 1959-60 were included in the study. They were evenly divided as to sex and their average age was four years and one month. They were all children of Oregon State College students and had not attended nursery school for more than two quarters.

Of the two children who were not included in the study, one was present during the preliminary observations, but left school before the commencement of the actual study. The other child, because of his particular individual needs, rested away from the other children.

Design

The sixteen children rested in two different rooms. Nine of them had their beds in Resting Room 1 and seven of them had their

beds in Resting Room 2. The children in Resting Room 1 were divided into three groups of three children each; the children in Resting Room 2 were divided into two groups, one group having four children and the other having three. These groupings were based on existing bed arrangements. Children occupying consecutive beds comprised a group.

Each of these five groups was observed five times over a period of five weeks, totalling twenty-five observations. The group which was observed at rest on a particular day was observed at lunch on that same day. The observations were rotated so that each group, for its five observations, was observed on a different day of the week with equal lengths of time between observations among all groups. This was done to minimize the influence of continuous observation on the child's behavior and obtain a sample of behavior for each day of the week. The Rotation Scheme used appears as Appendix A.

Ratings of children's behavior during rest were made every eight minutes during the total observation period of about twenty-five minutes. Thus, three ratings of the child's behavior at rest were obtained. Throughout the observation period there was another teacher present in the resting room. This enabled the observer to focus most of her attention on the group under observation.

After rest the teachers and children all went to the lunch room. The tables were all set with food on them. The teachers (which included the observer) had specific tables at which they

sat every day. Each child's symbol card was placed on the lunch table at which he was to sit for lunch that day. From the Rotation Scheme (Appendix A) the person setting the tables for lunch knew which children were to be observed on a particular day. Symbol cards of only these children (either three or four, as the case would be) were placed at the observer's table. The children in the study thus automatically came and sat at the observer's table.

The guidance techniques used by the observer during the lunch period were those developed by Morse and Chittenden (23) in their study of the effect of size of initial food servings on eating efficiency of a group of preschool children. The guidance techniques permitted the observer to (a) make casual comments about the food, like "the carrots are crisp today"; (b) make indirect suggestions about eating the food, like "a drink of milk will help"; and (c) make comments about the technique of eating like, "it might help if you use your spoon". The observer was not permitted to make direct suggestions concerning the amount of food to be eaten. These guidance techniques are spelled out in detail in Appendix B.

Several measures were necessary for the study; a measure of the response to food, a measure of food consumption and a measure of behavior during rest. The instruments used in obtaining these measures are discussed below.

Measuring Instruments

Eating Scale for measuring Behavior during Rest. A five-point

scale for measuring the behavior of children during rest was devised for the study. Three aspects of children's behavior during rest were measured (a) Restfulness versus Restlessness; (b) Vocalization versus Non-vocalization and (c) Attention-seeking versus Non-attention-seeking. To obtain scores for these scales, each scale position arbitrarily was assigned a numerical value. These scale positions ranged from a value of 9 for the most desirable behavior to a value of 1 for the least desirable. The rest period was divided into three eight minute observation periods to better capture the nature of the child's behavior throughout the rest period. A rating was made on each scale for each eight minute period. A child's overall scale score was determined simply by adding the numerical values assigned the scale positions at which he fell. These scale forms appear as Appendix C.

Eating Scale for measuring Response to Food. A five-point scale for measuring children's response to food also was devised for the study. The response scale centered on (a) Response to Food before Eating and (b) Response to Food during Eating. To an extent these scales were based on an experimental procedure used by Lamb and Ling (14) for an analysis they did on food consumption and preferences of nursery school children. Scores for these scales were obtained in the same way as outlined for the behavior during rest measure. These scale forms appear as Appendix D.

Eating Scale for determining the Amount of Food Consumed. A

modified version of the chart prepared by McCay, Waring and Kruse (19) for their study on children's food intake during a noon meal at nursery school was used. Each food item arbitrarily was given a unit value of 1. For example, a tablespoonful of meat or vegetable equalled 1 unit; a glass of milk equalled 1 unit; a stick of toast equalled 1 unit; a serving of dessert equalled 1 unit, and so on. By giving the same unit value to all different food items and having separate columns for (a) different foods on the menu; (b) total units served; (c) total units left over; and (d) total units consumed, recording procedure was simplified. A child's total score was determined by obtaining the difference between the amount of food he was served and that which was left over on his plate when he was through eating. The record form for this measure appears as Appendix E.

Reliability of Observers

Prior to actual data collection, the reliability of the observer and the individual rating scales were demonstrated for all three measures used in the study. Six groups of children were observed in the reliability study by the observer and a co-observer. The measure of reliability was the percent agreement on category entries between observers, observing simultaneously but independently. The formula used in computing these measures was:

$$\frac{\text{Agreements}}{\text{Agreements} + \frac{1}{2} \text{Disagreements due to Misclassification}}$$

The reason for including only half of the disagreements due to mis-

classification in the formula is the fact that misclassification for one category of behavior automatically brings an error in misclassification for another category. This is illustrated by a situation where the observer recorded "moderately restful" in an eight minute interval of time while the co-observer recorded "neither particularly restful nor particularly restless". Obviously, one or both of the observers were in error in classifying this behavior, but while there actually was only one disagreement between observers, two errors in classification had to be counted. The reliability data for the individual categories of the Behavior during Rest scale appear in Table I.

TABLE I

INDIVIDUAL CATEGORY RELIABILITY
FOR MEASUREMENT OF BEHAVIOR DURING REST

Category	Percent Agreement	Percent Agreement within a scale position
Restfulness versus Restlessness	.81	.90
Vocalization versus Non-vocalization	.81	.90
Attention-seeking versus Non-attention-seeking	.81	.90

Reliability also was established for the Response to Food scale. During the six preliminary observations the co-observer

sat by the lunch table with the rating scales in her hand and kept recording her observations throughout the lunch period. The observer sat with the subjects at a table on which food had already been laid. She kept the rating scales on the table by her plate and recorded her observations throughout the lunch period. The same formula that was used in computing category reliability for behavior during rest was used for computing reliability for response to food. The reliability data for the individual categories of the Response to Food scale appear in Table II.

TABLE II

INDIVIDUAL CATEGORY RELIABILITY
FOR MEASUREMENT OF RESPONSE TO FOOD

Category	Percent Agreement	Percent Agreement within a scale position
Response to Food before Eating	.81	.90
Response to Food during Eating	.70	.81

The measure of food consumption did not allow for the computation of individual category reliability, so only a measure of total observer reliability was obtained for this measure. The formula for computing reliability of observers was:

Agreements
Agreements + Disagreements

Based on this formula the reliability of observers for amount of food consumed was .91.

With the exception of the category Response to Food during Eating, all the category reliabilities were above .80 and consequently were assumed to be adequate to permit observation for purposes of data collection.

Method of Procedure

There was no difficulty in obtaining the cooperation of the subjects. This probably was due to their being observed in an environment familiar to them, both during rest and lunch. Hardly any changes were made in the usual procedure followed at the nursery school in order to carry out the study.

During rest, there was always another teacher in the room. This enabled the observer to make observations without interruption. The observer interacted with a child or attended to one only when it was absolutely essential.

All of the sixteen children had had lunch at the observer's table during the preliminary observations, so they were familiar with the measurement procedures. Occasionally a child would ask the observer if his name was being written, or would request that it be written, but beyond this no particular attention was paid the

observer by the children.

It is the general practice at the nursery school to let children help themselves to the finger-foods like toast, sandwiches, celery sticks, apple or tomato wedges etc.; also, to help them with the first servings of meat, potatoes etc. but let them help themselves to second or additional servings. This procedure was slightly modified in the present study. The observer helped the children with the first as well as second and additional servings. This facilitated recording the total number of units served and the total number of units left over. The difference between these two figures represented the amount that was actually consumed.

Observer-child contacts were kept as uniform as possible throughout the eating situation, especially with reference to the guidance techniques centering around eating. The menus for each week of the study were planned in advance and care was taken to see that each meal constituted the same number of food units. The menus used during the study appear as Appendix F.

CHAPTER III

RESULTS AND DISCUSSION

Results of the Study

The purpose of this study was to determine if there was any relationship between the type of day children had at nursery school, as this was reflected in behavior during rest, and their response to food on that day. The measuring instruments used and the procedures followed during the observation period provided three sets of data for each child each day he was observed. These represented the child's behavior during rest, his response to food and the amount of food he consumed.

Each of the sixteen children in the study was scheduled for five observations during rest and then at lunch. The children were divided into five groups for purposes of observation. Four of these groups had three children each and one had four. Each of these groups was observed five times over a five week period, making a total of twenty-five observations. The correlation coefficients were computed on the basis of the data gathered in these twenty-five observations.

Since the children were observed in groups, the possibility of group influence or day-to-day fluctuation within groups had to be taken into account in the correlational analysis. This was done by computing the correlations on a within day basis, that is, by computing separate correlation coefficients between rest and response to food and rest and amount of food consumed for each

day for each group and then pooling these within day coefficients to arrive at an over-all estimate of the relationship between the two sets of variables.

The various within day correlation coefficients were calculated only for those observations which involved groups which had three or more children in them. Of the twenty-five observations, eight involved groups which had less than three children. Consequently, the single pooled within day correlation coefficients were based on only seventeen observations. The results of this analysis appear in Table VIII.*

TABLE III

SCORES OBTAINED BY SUBJECTS IN GROUP 1
FOR EACH DAY OF OBSERVATION
OVER THE FIVE WEEK OBSERVATION PERIOD

Subject	Day of Week	Behavior during Rest	Response to Food	Amount of Food Consumed
A	Monday	67	12	9
	Tuesday	77	16	7
	Wednesday	79	18	12
	Thursday	79	18	11½
	Friday	71	14	10

*All data were computed and analysed by the Statistical Department, Oregon State College.

TABLE III, Continued

Subject	Day of Week	Behavior during Rest	Response to Food	Amount of Food Consumed
B	Monday	77	14	11
	Tuesday	71	14	7
	Wednesday	75	16	9 $\frac{1}{2}$
	Thursday	79	18	10
	Friday	81	18	11
C	Monday	67	18	10 $\frac{1}{2}$
	Tuesday	57	8	6 $\frac{1}{2}$
	Wednesday	71	18	12
	Thursday	59	12	9
	Friday	69	14	9
D	Monday			
	Tuesday	53	8	6
	Wednesday	69	12	8 $\frac{1}{2}$
	Thursday	53	14	8
	Friday	61	10	7

TABLE IV

SCORES OBTAINED BY SUBJECTS IN GROUP 2
FOR EACH DAY OF OBSERVATION
OVER THE FIVE WEEK OBSERVATION PERIOD

Subject	Day of Week	Behavior during Rest	Response to Food	Amount of Food Consumed
E	Monday	43	14	7
	Tuesday	45	12	9
	Wednesday	57	14	9
	Thursday	53	10	7 $\frac{1}{2}$
	Friday	39	14	6 $\frac{1}{2}$
F	Monday	71	16	10
	Tuesday	65	16	11
	Wednesday	73	8	12
	Thursday	65	18	11
	Friday	73	18	15
G	Monday	73	18	11 $\frac{1}{2}$
	Tuesday			
	Wednesday	53	8	9
	Thursday			
	Friday	73	14	14

TABLE V

SCORES OBTAINED BY SUBJECTS IN GROUP 3
FOR EACH DAY OF OBSERVATION
OVER THE FIVE WEEK OBSERVATION PERIOD

Subject	Day of Week	Behavior during Rest	Response to Food	Amount of Food Consumed
H	Monday	73	18	8½
	Tuesday	47	10	5
	Wednesday	49	10	5½
	Thursday			
	Friday	53	14	6
I	Monday	71	16	7½
	Tuesday	53	10	6
	Wednesday			
	Thursday	61	8	6
	Friday	69	16	6½
J	Monday	73	6	8
	Tuesday	75	14	8
	Wednesday	75	14	8
	Thursday	67	8	7
	Friday			

TABLE VI

SCORES OBTAINED BY SUBJECTS IN GROUP 4
FOR EACH DAY OF OBSERVATION
OVER THE FIVE WEEK OBSERVATION PERIOD

Subject	Day of Week	Behavior during Rest	Response to Food	Amount of Food Consumed
K	Monday	67	12	8
	Tuesday			
	Wednesday			
	Thursday	69	12	7 $\frac{1}{2}$
	Friday	77	18	10
L	Monday	75	14	11
	Tuesday	27	8	6
	Wednesday	57	8	7
	Thursday	61	6	7
	Friday	71	12	10
M	Monday	81	18	12
	Tuesday	75	18	11
	Wednesday	81	12	11
	Thursday	81	18	11
	Friday	81	18	11

TABLE VII

SCORES OBTAINED BY SUBJECTS IN GROUP 5
FOR EACH DAY OF OBSERVATION
OVER THE FIVE WEEK OBSERVATION PERIOD

Subject	Day of Week	Behavior during Rest	Response to Food	Amount of Food Consumed
N	Monday	67	12	8½
	Tuesday	71	18	9½
	Wednesday	67	14	9
	Thursday	49	12	6
	Friday			
O	Monday	55	10	8
	Tuesday	65	16	9
	Wednesday	27	8	5½
	Thursday	45	12	5½
	Friday	51	10	8
P	Monday	45	8	7
	Tuesday	9	6	5
	Wednesday	17	8	5½
	Thursday	19	10	3½
	Friday	47	8	8

TABLE VIII

CORRELATION BETWEEN BEHAVIOR DURING REST (X_1),
RESPONSE TO FOOD (X_2),
AND AMOUNT OF FOOD CONSUMED (X_3)

Variables	Correlation	Degrees of Freedom
$r_{X_1X_2}$.672	21*
$r_{X_1X_3}$.832	21

* Total degrees of freedom are based on the number of children in each group minus 2. Thus with a group of 4 children, there were 2 degrees of freedom; with a group of 3 children, 1 degree of freedom etc.

The hypothesis of no relationship between these variables was tested, using a 5% level of significance. Since the critical value of a correlation with these degrees of freedom and at this level of significance is .411, it can be seen from the data in Table VIII that the hypotheses of no relationship are rejected for both correlations. From the results of this study it is clear that there is a significant positive relationship between behavior during rest and the response to food and the amount of food consumed.

These results have a clear-cut bearing on the assumption central to the study that a child's experiences during the day are inter-related and cumulative, and are reflected in the child's behavior during rest, response to food, total food intake etc. The high correlations between these factors would support this assumption, provided the correlations are reflecting more than just consistency within individuals in their behavior during rest, response to food,

food intake etc. For example, if particular children in the sample consistently ate a certain amount and behaved in a certain way during rest, the high correlations demonstrated in the study would be reflecting this consistency rather than the tendency for the two factors to vary together.

This possible source of error was checked by ordering the data according to individual children (see Tables III to VII). When the data are looked at in this way it is clear that there was considerable variation on the part of individual children over the five days of observation. On this basis it seems fair to conclude that the correlations between response to food and rest do not reflect unduly individual patterns of consistency.

The effect of group influence on the behavior of children was another potential source of error in the data. If it could be shown that the children within a group tended to react similarly on a particular day, it could be taken as evidence for the significance of group effect in contrast to the assumption of cumulative effect. To test this out the data in Tables III to VII also were arranged according to observation groups, with each table having within it the children who comprised a particular group. On inspection of these data it was clear that marked individual variation occurred within groups on any particular day. On this basis it seems fair to conclude that the behavior demonstrated during rest and around food was relatively independent of group influence; at least the groups did not tend to mold the behavior of the children within it in any particular direction.

Discussion of the Findings

In view of the size of the correlations obtained between these variables, it is evident that there is a close relationship between the child's behavior during rest and his response to food and also between his behavior during rest and the amount of food he consumes.

Many implications stem from these data. Perhaps the most significant one is the implication they have for the concept of the "whole" child. For a long while we have recognized, and talked about the fact that the way a child acts and the way he feels are closely tied together, and that these in turn are related directly to what has happened to the child in the past and what is happening to him in the immediate present. Yet while we have recognized this "holistic" nature of children and their behavior, we have very little research data to support the concept, and we have consistently looked at segments of a child's behavior in our research (30). One of the major contributions of this study is the support it gives to the "whole" child concept.

Closely allied to the concept of the "whole" child is the notion that the effects of experience are cumulative. When this concept is applied to the nursery school child we would expect the child to enjoy free play, participate in music and story time, spend the rest period, respond to lunch, consume food etc. in relation to each or all of the activities that have gone before.

As in the case of the "whole" child concept, our research design largely has failed to take this into consideration, and there is in fact little research evidence to support the notion. Support can be found for the cumulative effect concept in the data reported in this study.

The results of this study also have clear-cut implications for children's eating patterns. No longer can we treat the lunch period, be it at nursery school or at home, as an event or situation by itself. It must be planned for and thought of in relation to the other events of the day. If one is particularly concerned about having a child eat, then the kinds of experiences the child has before eating become important. In fact it may be that what one does here has more effect on how a child is going to eat than the use of techniques like presenting foods attractively, in small portions, or in serving dessert along with the main meal. As Rabinovitch and Fischhoff (27) have said, it is important that we feed children to meet their emotional needs.

The observer would like to stress that from the standpoint of nutrition it is not essential that every child learn to like all foods equally well. However, for those persons who become concerned if a child does not want to eat, an additional interpretation as to why he does not is offered by this study. In addition to the idea of food fussiness, food jags, etc. we can now point with some certainty to the possibility of cumulative upset. At a very practical level, this may serve to help keep some of the pressure from

children which adults so often put upon them in relation to their eating.

Limitations of the Study

The greatest limitation in the study was the inadequacy of the measurement around a child's response to food. While observer reliability for these scales during preliminary observations was adequate, their limitations became clear with continued observation. The inadequacy stemmed from two sources. First, systematic ratings of the situation were not possible. Although the children came into the lunch room at approximately the same time every noon, the lunch period was not of a fixed duration. The children were free to leave their table whenever they were through eating. Hence, it was not possible to divide the observation time into intervals of a definite number of minutes, and record accordingly.

Second, the categories drawn up to measure a child's response to food during the meal were inadequate in the sense that they did not provide a measure of the fluctuation of a child's response to food during the meal. The procedure that was followed involved the observer's checking only one category which she considered to best describe the child's over-all response to food during the lunch period, thus providing a relatively insensitive measure of the child's behavior. Whether this coarseness of measurement resulted in a spuriously high or a spuriously low correlation between response to food and behavior during rest is unclear.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

This study set out to determine whether any relationship existed between (a) the type of day a child had at nursery school and his response to food, and (b) the type of day a child had at nursery school and the amount of food he consumed. The kind of day a child had at nursery school was assumed to be reflected in his behavior during the rest period.

Sixteen children out of the eighteen children enrolled at the Park Terrace Nursery School at Oregon State College were included in the study. They were evenly divided as to sex, and their average age was four years and one month. They were all children of Oregon State College students, and had not attended nursery school for more than two quarters. The children were divided into five groups, four groups consisting of three children each and one group of four children. Each of them was observed on five different days of the week over a period of five weeks. Observations were made during the rest period and then during the lunch period. The group that was observed during rest on a particular day was observed during lunch on that same day. Behavior during rest was measured by a rating scale consisting of fifteen variables under the three headings Restfulness versus Restlessness, Vocalization versus Non-vocalization and Attention-seeking versus Non-attention-seeking.

The ratings were based on the overt behavior the child exhibited during three eight minute intervals.

Response to lunch was measured by a rating scale consisting of ten variables under the headings Response to Food before Eating and Response to Food during Eating. The Amount of Food Consumed was measured by a slightly modified version of the chart prepared by McCay, Waring and Kruse (19) for their study on children's food intake during a noon meal at nursery school.

Conclusions

High, positive correlations were demonstrated between behavior at rest and response to food, and food intake. The correlation coefficients, respectively were .672 and .832. On the basis of these data the hypotheses of no relation between these behaviors were rejected.

The implications of these data for the concept of the "whole" child, the cumulative nature of experience, and eating patterns were discussed.

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APPENDIX A

ROTATION SCHEME FOR OBSERVATIONS *

Group No.	Week and day of observation				
	1st week	2nd week	3rd week	4th week	5th week
1	Monday	Tuesday	Wednesday	Thursday	Friday
2	Tuesday	Wednesday	Thursday	Friday	Monday
3	Wednesday	Thursday	Friday	Monday	Tuesday
4	Thursday	Friday	Monday	Tuesday	Wednesday
5	Friday	Monday	Tuesday	Wednesday	Thursday

*The observations were held from mid-January to mid-February.

APPENDIX B

GUIDANCE TECHNIQUES USED DURING LUNCH

Observer-child contacts were kept as uniform as possible during the meal. The observer was limited in the choice of guidance techniques she could use with the children. She was allowed to:

- I. Make comments about food such as:
 1. "The carrots are crisp."
 2. "Isn't our food pretty today?"
- II. Make indirect suggestions concerning amounts of food to be eaten. These include:
 1. Getting food into position to eat.
 2. Placing food in the child's fork or spoon.
 3. Bringing the child back into position to eat.
 4. Making comments such as:
 - (a) "It's eating time now."
 - (b) "Take turns with your egg and sandwich."
 - (c) "A drink of milk will help."
 - (d) "I wonder what our dessert will be."
 - (e) "You are ready for another bite now."
- III. Make comments about the technique of eating, such as:
 1. "Tip your bowl."
 2. "Hold your spoon like this."
 3. "It would be easier to use your spoon."
 4. "Chew it first, then swallow."

The observer was not allowed to make direct suggestions concerning the amount of food to be eaten. These include:

1. Feeding the child.
2. Making comments such as:
 - (a) "Finish your food."
 - (b) "Let's get this plate cleaned up now."

APPENDIX C

RATING SCALE FOR MEASURING BEHAVIOR DURING REST

Restfulness versus Restlessness	Vocalization versus Non-vocalization	Attention-seeking versus Non-attention-seeking
Extremely restful - lies still without any body movement; very relaxed; dozes	No vocalization - does not say a word or produce any sound during the entire rest period	No attention-seeking - ties his own shoe laces; folds his blanket; dusts his bed after rest
Moderately restful - lies still with minimum body movement; moves only when necessary (say if he has to turn on his side); no random or exaggerated movements	Little vocalization - whispers or talks in a low tone only when he needs assistance in straightening bed, using blanket, tying laces, fetching a glass of water	Little attention-seeking - does some things on his own, but asks for help with others, giving no indication if he can do them or not
Neither particularly restful nor particularly restless	Sometimes vocalizes sometimes does not	Sometimes seeks attention, sometimes does not
Moderately restless - distracted by things in the room; keeps turning and twisting himself	Moderate vocalization - talks and laughs but does not disturb the whole room	Moderate attention-seeking - asks for help only when he has tried and cannot help himself in tying his laces, folding blanket or dusting his cot
Extremely restless - moves randomly and exaggeratedly; bounces on his bed; kicks; claps hands	Extreme vocalization - talks loudly so as to disturb the whole room; laughs; screams	Extreme attention-seeking - demands attention - seeks help even when he can do things for himself like putting on his shoes, tying laces etc.

APPENDIX D

RATING SCALE FOR MEASURING RESPONSE TO FOOD

Response to Food before Eating	Response to Food during Eating
Extremely eager to begin eating - chooses his plate, asks to be served first, wants to know what the dessert is going to be	Eats with great enthusiasm and/or pleasure; obvious enjoyment of food coupled with vocalization (I like this)
Moderately eager to begin eating - waits for his turn to be served but indicates in some manner that he is anxious for food, like touching the serving dish, holding outstretch hand for plate	Eats with moderate enthusiasm and/or pleasure - no vocalization about food but obvious enjoyment
Neither particularly eager nor particularly reluctant to begin eating - has an indifferent attitude about being served	Sometimes eats with enthusiasm, sometimes does not
Moderately reluctant to begin eating - dawdles; is in no hurry to begin	Eats with moderate enthusiasm - eats only some things. No vocalization but seems to dislike foods
Extremely reluctant to begin eating - refuses to begin eating	Eats without any enthusiasm - vocalizes dislike but still eats

APPENDIX E

RATING SCALE FOR DETERMINING THE AMOUNT OF FOOD CONSUMED

Subject	Weiners		beans		potatoes		celery		toast		milk		fruit-cup		(Total)		
	S.	L.O.	S.	L.O.	S.	L.O.	S.	L.O.	S.	L.O.	S.	L.O.	S.	L.O.	S.	L.O.	C.
A	1	-	1	-	1	-	1	-	1	-	1	-	2	-	8	-	8
B	2	$\frac{1}{2}$	2	-	3	$\frac{1}{2}$	1	-	1	-	2	-	2	1	13	2	11
C	2	-	1	1	2	1	1	1	2	1	1	-	2	-	11	4	7
D	1	-	1	1	1	-	1	1	3	-	1	-	1	-	9	2	7

S. served; L.O. left-over; C. consumed

APPENDIX F

MENUS USED DURING THE STUDY

Day of Week	1st week	2nd week	3rd week	4th week	5th week
Monday	Weiners, cauliflower, mashed potatoes, celery, toast, fruit cup, milk	Spaghetti and meatballs*, green beans, orange slices, toast, vanilla ice-cream, milk	Chicken and rice*, cooked carrots, toast, lettuce, pears, milk	Liver loaf, peas, mashed potatoes, carrot sticks, toast, fruit cup, milk	Spaghetti and meat balls*, lima beans, lettuce, toast, apricots, milk
Tuesday	Ham loaf, spinach, buttered potatoes, apple wedges, peanut butter sandwiches, ice-cream, milk	Lamb patties, stewed tomatoes, parleyed potatoes, carrot sticks, toast, sliced bananas, milk	Liver loaf, green beans, baked potatoes, carrot sticks, toast, apple-sauce, milk	Scrambled eggs, broccoli, oven brown potatoes, celery, toast, gingerbread, milk	Heart and beef loaf, beets, baked potatoes, toast, jello, celery, milk

* Food items arbitrarily valued as 2 units; all other items arbitrarily valued as 1 unit.

APPENDIX F, Continued

Day of Week	1st week	2nd week	3rd week	4th week	5th week
Wednesday	Cheese souffle, parsleyed potatoes, broccoli, green beans, whole wheat toast, spice cake, milk	Scrambled eggs, broccoli, baked potatoes, toast, carrot sticks, pears, milk	Meat loaf, peas, mashed potatoes, celery, toast, peaches, milk	Lamb patties, buttered carrots, oven brown potatoes, lettuce, toast, apple-sauce, milk	Cheese souffle, green beans, parsleyed potatoes, carrot sticks, peanut butter sandwich, chocolate pudding, milk
Thursday	Creamed chip beef, lima beans, baked potatoes, toast, celery, apricots, milk	Tongue, cauliflower, mashed potatoes, lettuce wedges, toast, chocolate pudding, milk	Beef stew*, spinach, toast, pineapple chunks, chocolate cake, milk	Rice-beef-tomato casserole*, spinach, broccoli sticks, toast, chocolate pudding, milk	Stewed chicken, buttered carrots, mashed potatoes, celery sticks, toast, icecream, milk
Friday	Tuna casserole*, peas, toast, carrot sticks, fruit cup, milk	Salmon loaf, peas, baked potatoes, celery, toast, fruit cup, milk	Creamed eggs, brussel sprouts, oven brown potatoes, carrot sticks, toast, fruit jello, milk	Tuna and noodles*, green beans, carrot sticks, toast, rice pudding, milk	Salmon loaf, peas, oven brown potatoes, toast, fruit cup, milk

*Food items arbitrarily valued as 2 units; all other items arbitrarily valued as 1 unit.