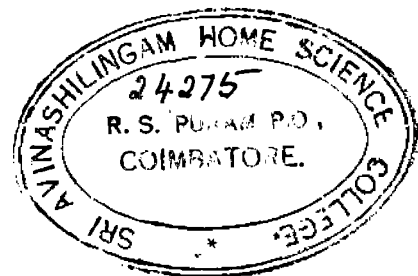


**FOOD PREFERENCES OF PRESCHOOL CHILDREN IN TERMS OF  
COLOUR, TASTE, CONSISTENCY AND SHAPE OF  
SELECTED VEGETABLE PREPARATIONS**

**By**

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## I INTRODUCTION

Healthy children of today are the foundation for a strong India of tomorrow (Nehru, 1963)<sup>1</sup>. Health as defined by WHO (World Health Organisation) of United Nations (1962-63)<sup>2</sup> is not mere absence of disease, but the complete well being of all the faculties - physically, mentally, and socially.

Mahatma Gandhi (1965)<sup>3</sup> had stressed that, a healthy mind in a healthy body was a self evident truth in children. According to the UNICEF (United Nations International Children's Fund) (1963)<sup>4</sup>, maintenance of health is basic to happy and productive life. Key to health is nutrition, and nutrition is conditioned by the type of foods eaten, which in turn is an outcome of the food habits developed in early childhood.

Anderson and Browe (1961)<sup>5</sup> express that childhood is a period of slow but steady growth and development, which must be sustained by nutritionally adequate diet. Maintenance of health at optimum level is also the function of nutrition, particularly during the preschool years (1963)<sup>6</sup>.

Food not only nourishes the body, but also provides satisfying emotional experiences (Martin, 1963)<sup>7</sup>. According to Martin (1963)<sup>7</sup> Children develop food habits through the manner in which they are fed. Friendly attitudes towards food can be developed permanently if the food is associated with comfort, contentment, satisfaction and security. Children are not born with food preferences, but only learn

them and acquire permanent tastes for the foods to which they are exposed. Davis (1939)<sup>8</sup> found that weaned infants could select their own foods without prejudices.

Jersild (1947)<sup>9</sup> observed that pre-school children were sensitive to taste, colour, feel, consistency, texture and appearance of foods, and exhibited food preferences at an early age. Amidon *et al* (1948)<sup>10</sup> pointed out that children love the gay colours of vegetables, the soft and smooth texture of foods. Enjoyment of meals for them occurs through the eyes as well as taste. Studies of Lowenberg (1949)<sup>11</sup> indicate that children of younger age generally prefer crisp, raw vegetables, and foods that are familiar in texture, flavour, size and appearance.

In most societies as Read (1949)<sup>12</sup> traces food habits are the outcomes of emotional associations. Food is one of the media through which attitudes and sentiments are communicated to the child. Therefore the child associates food with family sentiments. Ultimately food habits become woven into the fabric of personality of the child.

One of the goals of nursery school education delineated by Read (1959)<sup>13</sup> is, "Ensuring in children a positive, accepting attitude towards eating. If a child enjoys his food, he has the prerequisite for building other learnings about eating". The second goal is to help the child enjoy a variety of nutritionally desirable foods.

On account of the poor socio-economic conditions and absence of knowledge many parents, are not bestowing proper attention towards the nourishment of their children as cited FAO/WHO (1983)<sup>14</sup>. It is unfortunate that not all the 60 million pre-school children in India are getting food adequate for healthy growth and development, as per Nayyar (1984)<sup>15</sup>. Patkar (1952)<sup>16</sup> states a little thought, a little imagination, a little understanding of the children's mind, and a little physical effort can be greatly rewarding in ensuring adequate intake of foods by children.

The pre-requisites for feeding children adequately are, knowledge of their nutritional requirements and recognition of their preferences, likes and dislikes. Fortunately years of devoted work by the ICMR - The Indian Council of Medical Research - (1955)<sup>17</sup> has made available information on the nutritional requirements of children. But no study has been made on the factors which influence children's, preferences for food. It is therefore necessary to understand the food preferences of young children and to help them to recognise, select, and enjoy foods which are essential for them - Davis (1949)<sup>8</sup>.

Therefore, this investigation has been undertaken to study the preferences of pre-school children for selected vegetables, in a nursery school and in their homes.

## II REVIEW OF LITERATURE

The review of literature pertaining to food preferences of preschool children are discussed under the following heads:

- A. Foods for health and growth of children.
- B. Food preferences of preschool children.
- C. Role of vegetables in children's diets.
- D. Methods of studying the food preferences of children.

### A. Foods For Health And Growth Of Children.

Johns et al (1958)<sup>18</sup> defined health as a quality resulting from the total functioning of the individual that empowers him to achieve <sup>a</sup>satisfying personality and useful life. According to Etheredge (1959)<sup>19</sup> health is the working in harmony of body and mind at their highest capacities.

Gopalan (1957)<sup>20</sup> views, that growth and development constitute the most important vital activities in infancy and childhood, and proper food is the essential requisite for the maintenance of health.

Tanaja and Singh (1959)<sup>21</sup> have emphasised that healthy children of today will be the healthymen of tomorrow. Good nutrition is a firm foundation in infancy and childhood, for an impressive super structure of adulthood. Health and wellbeing are impossible without a good diet, satisfactory both in quality and quantity, as indicated by the FAO (Food and Agriculture Organisation(1959)). According <sup>22</sup> to

Goodspeed (1953)<sup>23</sup> and Venkatachalam <sup>and</sup> Rebello~~y~~ (1952)<sup>24</sup> children need to <sup>eat</sup> set the right kind of foods in order to be healthy and vigorous.

Nayar (1952)<sup>25</sup> says 'to enable our children to develop their potentialities, their minds must be trained and their bodies well built so that their talents can be developed and directed into creative and useful channels.' we must prepare, as well as project, our children so that they grow and develop to their full stature and dignity.

#### B. Food Preferences of Preschool Children

Dudley et al., (1960)<sup>26</sup> indicate, the attitudes and preferences towards food of children influence to a large extent their food intake and subsequent nutritional status. Studies have shown that children do have distinctly individualistic preferences for certain foods.

Funk and Wagnalls (1961)<sup>27</sup> define the term preferences, as an act of estimation of choice of one thing over another, if choice is permitted. Leverton and Coggs (1951)<sup>28</sup> have expressed, <sup>141</sup> food preferences are of fundamental influence in nutritional status. Pilgram (1961)<sup>29</sup> points out that one of the important predictor in food consumption is preference, which implies the degree of likes and dislikes for a food. Thus food preferences are good indicators of what people will or will not eat, and can serve as a starting point for planning improvement in dietaries. According to "The National Vitamin Foundation"(1952)<sup>30</sup>,

the preferential trend develops quickly or slowly according to individual, and indicates that the individual is learning to discriminate preferentially between two test foods.

Doreus (1942)<sup>31</sup> expresses that the choice or selection of food is determined by tastes, and by novelty<sup>ety</sup> of foods. Also children eat largely one kind of food if offered a free choice, but will switch to a different kind after a short time. Patkar (1966)<sup>32</sup> views that food preferences are acquired but not inherited by children. That is, when he grows up he tends to select foods according to his likes in a way he was taught to eat. According to Selling (1942)<sup>33</sup> many children learn to decide what they like to eat by observing the foods about them. When they become adults also they are likely to prefer the foods to which they were accustomed.

Lovenberg (1948)<sup>34</sup> indicated that food problems would not increase because of food preferences but are likely to decrease due to lessening of adult pressure. Furthermore children will increase their interest in meals. Thus choice helps to stimulate appetite. A knowledge of the kinds of foods, infants and children like, is helpful in building food acceptance (1957)<sup>35</sup>. According to Langford (1960)<sup>36</sup> guided self selection of foods within limits, dictated by nutritional needs often promotes better eating habits. As Wilson et al., (1961)<sup>37</sup> observed that for the nursery school children, provision of a choice, as simple as, the

selection between two vegetables brought about better habits of eating and enjoyment of foods. Breckenridge and Vincent (1965)<sup>38</sup> state that giving freedom in the choice of appropriate foods helps children to develop satisfactory food habits.

Studies under the auspices of the United States Department of Health Education and Welfare (1965)<sup>39</sup> have indicated that children have food preferences and eat all kinds of food if given some freedom of choice and not forced against their will. Thus Mowery and Snydan (1954)<sup>40</sup> state that infant<sup>n</sup> shows definite food preferences.

According to Duncan et al., (1952)<sup>41</sup> at one year, food preferences of children have their ups and downs with definite preferences for certain foods. At two, the preferences become more positive while at three, the child starts enjoying making simple choices between two alternatives. Landreth (1955)<sup>42</sup> indicates that the four year olds enjoy and like to have their suggestions for a particular dish while planning the weekly menu.

There are two factors which determine food preferences, what the environment conditions, and what the food offers. Among the environmental factors Selling (1942)<sup>33</sup> and Sprright (1947)<sup>43</sup> emphasized that childhood training, along with economic background, aesthetic training, educational levels, national, traditional religious, and age differences

influence individual preferences. Breckenridge (1959)<sup>k</sup> reasons that food choices of children reflect the traditional, cultural, racial, biological, physical, psychological, social, economical and educational environment. Vawter and Konish (1953)<sup>45</sup> reiterates that <sup>7 factors</sup> such as mental status, sex, age, area of living, size of home community and religion influence food choices.

According to Hedwig (1949)<sup>46</sup> if the parental pattern had been such that no pressure is exerted children will eat well, accepting foods as casually as playing with things, and develop a feeling of liking towards a variety of foods. *After Hedwig (1949)<sup>46</sup>, Bradbury and Aidon (1943)<sup>47</sup>, Faegre and Anderson (1955)<sup>48</sup> Kellogg (1949)<sup>49</sup> and Blumenthal (1953)<sup>50</sup> stress that meal time should be happy and cheerful, because children associate their preferences with pleasant experience.*

Lowe (1955)<sup>51</sup> discusses that the first appraisal of food is by sight, namely the colour, (attractive or discoloured), and by the size surface (whether smooth, rough or wrinkled). Langford (1960)<sup>52</sup> notes that food preparations which can be easily handled and chewed by children are the key factors to promote their food likes. When children do not like vegetables a good practice may be to let the child, choose the items of vegetable he wants.

Maclean (1934)<sup>52</sup> and Breckenridge and Vincent (1965)<sup>38</sup> state that, since sense perception affects food preferences in

proportion to the sensitivity of the individual, the senses of sight, smell, taste, and touch are important in determining food preferences. According to Patkar (1966)<sup>16</sup> as the smell and sight of the foods, are the first appetizers, much thought should be given to them. Children love different forms and colours. An effort should be made to appeal to them through these means.

### Colour

According to Ilg (1948)<sup>53</sup> vegetables like beets and carrots are most preferred by children because of their attractive and pleasing colours. Goldman (1959)<sup>54</sup>, Spock *et al.*, (1959)<sup>55</sup> and Wilson *et al.*, (1961)<sup>37</sup> reveal that the first sense of reaction of children to food is visual, and the eye appeal is a strong one. Unless food is attractive and tempting in appearance, it is impossible to get an individual interested in eating. Colour makes an universal appeal in children.

As Langford (1960)<sup>36</sup> and Hammond (1963)<sup>56</sup> suggest use of contrast in colours in children's meal makes it look gay and inviting.

Stevenson and Miller (1960)<sup>57</sup>, and Breckenridge and Vincent (1965)<sup>38</sup> suggest that variety in colour combinations enhance appetite in children. Moleson (1964)<sup>52</sup> points out that natural and light colours induce good appeal and appetite better than dark colours.

### Taste

Love (1955)<sup>51</sup> views that the basic tastes are sour,

salt, sweet and bitter, and sometimes hot. Most foods contain a combination of these tastes. Breckenridge and Vincent (1955)<sup>38</sup> state that from the early weeks of life of an infant taste discrimination is present and provides a basis for the selection or the liking of foods. The sensitivity for taste varies from individual to individual and also in the same individual from time to time. The United States Department of Health Education and Welfare (1955)<sup>39</sup> notes, that the way food feels and tastes to a young child leads to the formation of his likes. According to Spock et al., (1959)<sup>55</sup> and Edge<sup>58</sup>, most children like foods that are not highly seasoned or spiced or very sour, but lightly salted.

#### Consistency

Lowenberg (1948)<sup>59</sup> states that preschool children prefer, foods with a soft, jelly appearance and consistency such as mashed potato. Hughes (1961)<sup>60</sup> views that the palatability may be greatly increased by some contrasts in textures and consistencies provided for children.

As Kilander (1951)<sup>61</sup> and Langford (1960)<sup>36</sup> advise the gradual introduction of new as well as more foods in the diets of children, so that they could become accustomed to new forms and textures. Goldman (1959)<sup>54</sup> notes that the softness or dryness of foods are influencing factors and have interesting effect on the perception in children. Spock, et al., (1959)<sup>55</sup> reports that foods that are gummy, sticky

or stringy are generally unpopular.

#### Size and shape

Stevenson and Miller (1960)<sup>57</sup> and Hughes (1961)<sup>60</sup> explain that the forms of the food served to children deserve some consideration. Varying the shape and forms or designs of foods stimulate children to eat well. Langdon (1946)<sup>52</sup> advocates that some raw vegetables can be served in the form of sticks to help to develop the chewing skills of children. According to the nursery school association of Great Britain and Northern Ireland (1962)<sup>63</sup> carrot sticks and shredded cabbage are always liked and enjoyed by children. Goldman (1959)<sup>54</sup> suggests, that the food will become monotonous if it lacks in variety with regard to shapes. Mclean (1964)<sup>52</sup> indicates that the sight of the food including size and shape influence one's feelings about food and make individual<sup>5</sup> want to eat and enjoy the food. Variety in shapes is more tempting than similarity. Geometrical shapes are often attractive.

#### C. Role of Vegetables in Children's diets.

Nasset (1959)<sup>64</sup> and Menon (1962)<sup>65</sup> have stressed that vegetables are not only "protective", but also "regulate growth, development and other function of the body specially during the preschool years. Vegetables are essential to promote and maintain health, and also help one to feel well and look well.

According to the FAO report (1954)<sup>66</sup> vegetables are of great importance as supplementary foods in daily diets. Karnard (1957)<sup>67</sup> and Holt (1958)<sup>68</sup> consider vegetables as essential in the diets of children, since they help to build up the body's resistance. The roughage present in vegetables helps to maintain intestinal hygiene. As Sherman (1957)<sup>69</sup> points out vegetables give wholesome variety to the diets.

Stanely and Cline (1950)<sup>70</sup> and Hughes (1961)<sup>60</sup> define vegetables as succulent parts of plants used for food. Nicholls (1945)<sup>71</sup> and Holt (1958)<sup>68</sup> classified vegetables into main types according to two- 1. the botanical family relationship, such as legumes and 2. the parts of plants, such as roots, tubers leaves <sup>Stem</sup> (terns, bulbs, flowers, raw fruits, nuts and seeds. Bogert (1934)<sup>72</sup> and <sup>Gopalou and</sup> Balasubramanian (1966)<sup>17</sup> have included green leafy vegetables among the three classes of protective foods. The other two classes are non-leafy vegetables and roots-tubers.

The most important nutritive contribution of vegetable is the supply of vitamins and mineral elements as indicated by Howley et al., (1955)<sup>73</sup>, Nasset (1959)<sup>64</sup> <sup>Stevenson</sup> and Miller (1960)<sup>57</sup> and Cooper et al., (1963)<sup>74</sup> and Davidson et al., (1963)<sup>75</sup>. Leafy vegetables are rich in carotene, thiamine riboflowin and calcium according to Patwardhan and Jagannathan (1962)<sup>75</sup> Faegre and Anderson (1958)<sup>48</sup> indicate that the yellow vegetables are rich in carotene content. Singh and Joshi (1960)<sup>77</sup> state that vegetables provide mineral elements

like calcium, phosphorus, and iron, and trace elements like copper and magnesium.

Pollard (1956)<sup>78</sup> and Krause (1966)<sup>79</sup> point out that vegetables add merit and variety to diets. Interest in menus can be created through the inclusion of vegetables of different colours and textures according to West and Wood (1955)<sup>80</sup>. Hobson (1964)<sup>81</sup> mentions that vegetables exert a laxative effect in the intestine and help to avoid constipation.

Good Speed (1953)<sup>23</sup>, Stevenson and Miller (1960)<sup>57</sup>, Bogert (1960)<sup>72</sup>, Hughes (1961)<sup>60</sup> and Hobson (1964)<sup>81</sup> all advocate that vegetables contribute desirable appearances palatability, variety of colour, texture, odour and flavour to the daily foods, thus influencing the likes of children.

#### D. Methods of Studying Food Preference of Children

Breckenridge (1959)<sup>44</sup> lists the methods for studying the food preference of preschool children as, observing the children's reactions during meal times, interviewing the mothers to note the food likes and dislikes and interviewing the children with a check list.

##### Observation of children at Meal times

Davis (1939)<sup>8</sup> arranged for 15 children of 6-11 months of age to select foods of their choice from a tray carrying an array of raw foods such as carrots, peas, and lettuce, foods not in combinations, for instance, puddings and custards

were never served, but milk, sugar and eggs were offered <sup>separately and less refined</sup> foods such as whole grain cereals. About 10-15 different foods were offered at each meal.

No suggestion or direction was made by the observers or others regarding the selection. The author concluded that children were not born with food habits and preferences but learned food preferences and habits.

Prevey (1936)<sup>82</sup> provided a choice of foods to three to four year<sup>+</sup> old children, allowing them to serve by themselves from a sidetable, on which regular nursery school menu, plus additional raw and cooked vegetables and a dessert were placed in a random manner. Records were maintained <sup>daily</sup> on eight boys and six girls for the foods selected, amount of food eaten, the time taken to eat and plate waste for each child. The attitudes of children during the period of self service were found to be satisfactory; since they appeared to enjoy the privilege of serving by themselves with little adult interference.

Justice et al., (1946)<sup>83</sup> studied the food intakes of nursery school children on two different methods of servings: (1) the standard method which consisted of serving food in plates and (2) the self selection method in which the child was permitted to serve by himself. In the later children were requested, to take as much as they could eat. The authors observed that in general although the milk intake

lessened, more protein foods, raw foods and desserts were consumed in the case of self service, thereby indicating that this type of service <sup>had</sup> and developed more desirable likes in children.

Tudley et al., (1960)<sup>26</sup> had studied the food preference of children during meal times. These <sup>or</sup> experimental period consisted of three phases each comprising ten days. During these periods along with <sup>the</sup> main meal, one, the vegetable was prepared and served in four different ways each day. Every child was offered a choice from these four varieties of preparations daily. Records were maintained on preparation<sup>s</sup> chosen by each child for the first and for the additional servings; and the left over, if any, was weighed. A preference score was compiled by ranking each preparation with respect to the different factors as follows: (1) choices at first serving (2) choices at additional serving (3) the quantity of vegetable at first serving (4) the quantity of vegetables at additional serving and (5) the proportion of vegetable preparation eaten. The scores obtained by this ranking process were added together to obtain a preference score. The observation indicated that there is a great deal of variation in children's preferences for vegetable<sup>s</sup> preparations.

Lamb and Ling (1943)<sup>27</sup> analysed the food consumption and preferences of a group of eight preschool children. Records on their food consumption and preferences were taken

for one week at three months intervals for a period of one year. It was noted that consumption of some food groups fell short of the recommended amounts, due to the improper meal planning and absence of positive liking on the part of the child for the foods needed.

Vance and Temple (1933)<sup>85</sup> compared the food preferences of children from an urban area in the Iowa State College Nursery School and children of the same age, sex and economic status in a rural area. They were observed during meals at home, on three successive days. All the children regardless of rural or urban areas showed first preference for vegetables and fruits.

Leverton and Coggs (1951)<sup>88</sup> studied the food choices of 615 boys and 1207 girls from farm and town areas; as basis for nutrition education among children. A questionnaire was issued on 45 different foods along with the following four point check list; namely,

Unwilling to eat,

Willing to eat once a week,

Willing to eat often,

and Never tasted to my knowledge.

The most popularly preferred foods were potatoes, greens, tomatoes and other fruits. Buttermilk and turnips were checked as "unwilling to eat". Soybeans and dried peas were under "never tasted". A few differences were

seen between the response of town and farm children. Many foods are liked usually by both sexes.

Leird and Breen (1939)<sup>85</sup> associate age with food acceptance in terms of changes in the taste buds. They have pointed out that there was a gradual decrease in the sensitivity of taste buds due to aging. The preference of women for sweets declined while the preference for a tart (sour) taste increased, as the age increased.

According to Ilg (1943)<sup>53</sup> by the second year the child is beginning to name foods and therefore can give a better indication of what he wants. Three is the age when green vegetables are more acceptable, especially the raw vegetables such as carrots, peas and potato. By the time the child reaches five years the strong preference towards foods are formed. Eppright (1980)<sup>87</sup>, Van Riter (1956)<sup>88</sup> and Breckenridge (1959)<sup>44</sup> have indicated that flavours of foods has an appeal to younger than older groups of children, whereas older children accept foods with strong tastes. With respect to individual foods, milk is preferred by the younger than older children. The situation is reversed for egg. At each age vegetables as a group were declared to be the least preferred.

Cooper et al (1963)<sup>74</sup> view that children differ greatly in their natural desire for foods. According to

these workers the four to five year olds prefer potato, raw vegetables and meat as judged by odour, colour and attractive serving.

McCarthy (1935)<sup>89</sup> made an effort to study the eating habits, food likes and food aversions of 48 children of two to seven years of age and those of their parents. He found that 35 percent of food aversion on the part of the elder family members were invariably associated with the aversions of children.

Metheny et al (1962)<sup>90</sup> tested the influence of parental food preferences, attitudes, and likes towards 35 specific fruits and vegetables on the choices of 103 children and their parents. They concluded that the incidence of the foods which were unfamiliar to the parents were also unfamiliar to the children.

As seen in the review of literature, to induce healthy appetite and desirable food preferences in children, food must be offered in an appealing manner, with choices, to let the child have his selection.

### **III EXPERIMENTAL PROCEDURE**

For the purpose of this study, to find the preferences of preschool children in terms of colour, taste, consistency, and shape of selected vegetables at home and school, the experimental procedure consisted of:

- A. Selection of subjects,**
  - B. Selection of vegetables and variables,**
  - C. Elicitation of children's food preferences at home,**
  - D. Observation of children's preferences at school,**
- and **E. Analysis of data.**

#### **A. Selection of Subjects**

For the purpose of this study, Sri Avinashilingam Home Science College Nursery School, Coimbatore, was selected on the following criteria:

- i) A well balanced planned lunch programme has been organised,**
- ii) Kind co-operation and guidance is extended by the Principal,**
- iii) Ready accessibility is offered being located in the College campus,**

- iv) Supervision by an expert in child development is present and being used, as laboratory nursery school,
- and v) Close rapport with parents has been established.

All the 32 children attending the nursery school, were included for this study. The details regarding the children are given in Table I.

TABLE I

## DETAILS OF AGE AND SEX OF SELECTED SUBJECTS

S.No;	Age Range in years		Boys	Girls	Total
	Yr. mn.	Yr. mn.			
1.	2 - 6	-- 3 - 6	10	4	14
	(Junior group)				
2.	3 - 7	-- 4 - 6	3	10	13
	(Senior group)				
3.	4 - 7	-- 5 - 6	2	3	5
	(Kindergarten group)				
Total			15	17	32

From Table I, it is seen that there are 15 boys and 17 girls, within the age range of two and a half to five years.

### B. Selection of Vegetables and Variables

Silver (1961)<sup>91</sup>, Patwarthan (1961)<sup>92</sup> and Grisvold (1962)<sup>93</sup> have emphasised, foods especially the vegetables selected for children must be nutritionally good to prepare them as future happy and healthy citizens of the country. According to Langford (1960)<sup>36</sup> vegetables such as cabbage, carrot, cauliflower, beans and greens are nutritious. The eight selected vegetables included in the interview schedule for eliciting children's preference in the home were used in the school for eliciting the preferences of children for these vegetables in terms of colour, taste, consistency and shape as shown in Table II.

TABLE II  
THE SELECTED VEGETABLES UNDER FOUR VARIABLES

Colour	Taste	Consistency	Shape
Snakegourd	Beans	Cauliflower	Carrot
Ladiesfinger	Cabbage	Greens	Beetroot
Cauliflower	Carrot	Snakegourd	Cabbage

It may be seen from Table II the vegetables were so selected that they could lend themselves for variables to be tested, are nutritious, versatile in preparations and available at all seasons. Carrots and beets can be cut into different shapes: greens can be cooked into different consistencies, colour changes can be effective in cauliflower and snakegourd, and beans and cabbage can be cooked into different tastes.

Colour draws the attention of children, (Langford, 1960)<sup>36</sup> Children are sensitive to texture, form and consistency of foods according to Amidon et al (1946)<sup>10</sup>. Feeny and Dodds (1966)<sup>94</sup> report that children seem to have keener sense of taste than adults. Justin (1948)<sup>95</sup> views that the size and shape of food presented deserves some consideration.

Hence it was decided to study the preference of children in terms of colour, taste, consistency and shape of vegetables. For each of these variable four varieties were selected as given in Table III.

**TABLE III**  
**THE VARIETIES UNDER FOUR VARIABLES**

Variables				
Number of variety	Colour	Taste	Consistency	Shape
1.	Natural	Sour	Thick	Grated
2.	With addi- tives (turmeric)	Salt	Semi-thick	Triangular bits
3.	Dark	Hot (Pepper)	Masial**	Long sticks
4.	Light*	Sweet*	Sticky*	Circular/ bits

\* Items discarded, after preliminary phase.

\*\* Homogeneous thin consistency.

For the variable shape the varieties are shown in Figure I. (A- Grated, B- Triangular Bits, and C- Long sticks.)

#### G. Elicitation of Children's Food Preference at Home

Interview method was adopted to gather data as recommended by Best (1953)<sup>86</sup> and Sellitis et al (1962)<sup>87</sup>. Similar to studies of McCarthy (1935)<sup>89</sup> and Metheny (1962)<sup>90</sup> enquiries were made about the food preferences of children at home by interviewing the mothers, and the steps followed were:



FIGURE I

VARIETIES PRESENTED FOR THE VARIABLE SHAPE

1. Formation of the interview schedule,
2. Pilot study,
- and 3. Conducting the interview

1. Formation of The Interview Schedule:

The interview schedule to note the food preferences of children at home comprised of two parts:

- a. On family background such as occupation, income and education of parents.
- b. On the children's eating behaviour, their likes towards vegetables listed with special reference to eight <sup>selected</sup> vegetables in terms of colour, taste, consistency and shape. (A copy of the interview schedule is given in Appendix A)

2. Pilot study:

A pilot study was conducted in Coimbatore city with ten mothers of non-nursery school children, to pretest the formulated interview schedule. After confirming the validity, with some modifications, it was used to interview the mothers of the subjects of this study.

3. Conducting the Interview:

The Principal of Sri Avinashilingam Home Science College, Coimbatore, wrote to each parent, explaining the purpose and the genuine interest of the investigator in studying the food preferences of children at home. A copy of the letter is given in Appendix B.

by mothers in the pilot study were chosen, to test the variables under the four varieties presented in Table III. (The recipes are given in Appendix C.)

**b) Standardisation of recipes**

The quality and quantity of ingredients, amount of water, cooking methods, time and type of cooking, were standardised through preliminary experiments to maintain uniformity of varieties. For example in the case of colour, the recipe for four varieties was standardised for repeatability to retain the characteristic colour to be tested namely natural, with additive (Turmeric) dark, or light. The following three recipes were selected:

i) Porial

ii) Kootu

and iii) Salad

1) "Porial"

Porial is a composite blend of vegetables with seasonings of dhal. Vegetables such as beans, cabbages, ladiesfinger and snakegourd were chosen to be cooked as porial.

ii) "Kootu"

"Kootu" is a combination of vegetables and dhal. Cauliflower, greens and snakegourd were chosen for this preparation. The recipe used in the nursery school menu was followed.

**111) "Salad"**

Salad usually consists of raw vegetables.

To find the preferences of children regarding the shape beetroot, carrot and cabbage were selected.

**2. Incorporation in the Menu**

The selected test samples were incorporated into menus, one per day, without changing the pattern of nursery school diets. Only one vegetable preparation was presented at a time in the order of porial, salad or 'koottu' respectively to avoid monotony.

Sample menu used for the study is presented in Appendix D. Thus this procedure was repeated with the selected vegetables for four variables and rotated daily one by one for five replicates as given in Appendix E.

**3. Selection of Equipment:**

List of equipment, selected for cooking and serving are in Appendix F.

The serving utensils were of stainless steel to which children were accustomed to. Besides the utensils have neat, clean, sparkling appearance, neutral colour, resistance to corrosion and hence most suitable.

Identical utensils and spoons were selected for all four varieties of preparation so as not to affect the choice of children.

4. Presentation of Test Samples to Subjects:

Presentation of test samples to subjects included the following steps:

- a. Preliminary phase
- b. Modification phase
- c. Experimental phase

a. Preliminary Phase.

In order to acquaint the nursery school children to the idea of four varieties of one test food and to denote their preferences, trials were conducted with cereals and vegetable preparations, at the preliminary phase, which included the following steps:

- i. Orientation of subjects,
    - ii. Physical set up,
    - iii. Presentation of test samples,
    - iv. Observing and recording.
- and <sup>iv. Serving,</sup>

1) Orientation of Subjects.

Before introducing the test foods, the investigator explained to the children that they would be provided with a chance to denote their preference to one among the varieties shown. Thus they could enjoy,

eating whatever they like. The serving personnel and observers were familiar to children, having known them for more than one year.

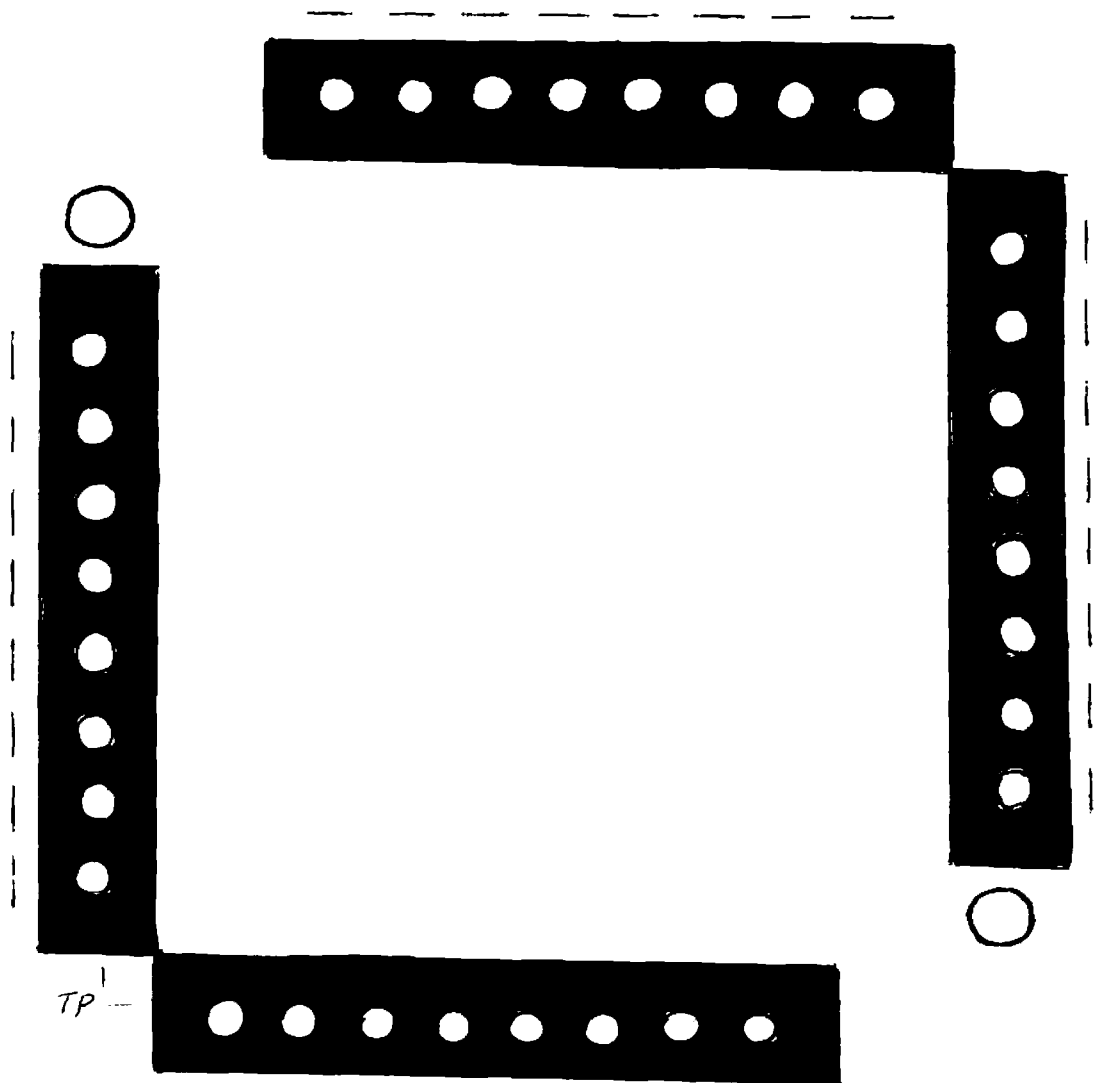
ii) Physical set-up:

The test samples were served with other items as in the menu on stainless steel plates, in a well equipped spacious dining room with good light and ventilation.

As per the usual routine of nursery school, children were seated comfortably on the floor on individual carpets, without being crowded or too close to others. The seating arrangements with bright coloured attractive, clean low tables, conformed with the suggestion by Read (1959)<sup>13</sup>. Figure II shows the seating arrangements of children while eating.

For this phase four serving bowls were arranged on a tray, two by two, in such a way that for each replicate the placement of bowls were changed. For example in the case of colour at the first time if the vegetable preparations are arranged in the order of natural, with additive dark and light, at the next time, the light coloured preparations would come as first bowl, then natural, and additive third and lastly dark.

FIGURE II



SEATING ARRANGEMENT FOR LUNCH

- TP - Table with plates
- - Carpets
- - Observer's seat

### iii) Presentation of Test Samples:

Robert (1955)<sup>35</sup> has pointed out, that the self-selection gives more freedom of choice in foods, and helps children in large measure to develop good habits of eating. Also this process allows a child to select the amount and kind or variety of foods he wishes. Hence the procedure of self selection was adopted for this study.

During the first three days of the preliminary phase, children were presented with two types of rice, prepared as pulse rice and curds rice and requested to select one preparation according to their choice. Then for the following four days four types of vegetable preparations were presented to find the preferences of children for the selected vegetables.

### iv) Serving:

As Langford (1960)<sup>36</sup> has recommended small serving in quantity for young children, quarter tea-spoonful of each of the four varieties were served out on the plates and kept ready. When the children were seated, the plates were given, and children were encouraged to taste all varieties.

When the child has tasted all varieties, two serving persons, ready with all varieties kept on a tray in four identical serving utensils, offered to children according to their choices. They went individually to each child if the plate was empty of test samples and showed the tray to let the child to have his/her choice by pointing to the preferred one. The children were given the understanding that they could call out for the serving person as 'akka'<sup>\*</sup> if they wanted to have an extra helping of a variety. (Figure III a & B).

The serving persons were changed to other tables on an alternative days to equalise their influence.

v) Observation and Recording:

As per the recommendation of Vanace and Temple (1933)<sup>85</sup>, Davis (1939)<sup>81</sup>, Prevey (1946)<sup>82</sup>, and Justice et al (1946)<sup>83</sup> the food preferences of children were recorded through observing at meal times.

Two observers, closely associated with all children, sat on low seats, at the junction of two tables, in opposite corners, throughout the study, as shown in Figure IV. This facilitated the observation of two tables in recording the children's preferences. The

-----  
\* 'akka' meaning elder sister in Tamil



(a) A CHILD SELECTING THE SAMPLE OF HER CHOICE

FIGURE III.



(b) SERVING THE SAMPLE THE CHILD SELECTED

FIGURE III



FIGURE IV  
OBSERVERS RECORDING THE PREFERENCES

preference of a child was recorded as soon as he/she pointed to a variety. The recording sheet is given in Appendix G. Further, the number of choices in each variety, and measured waste if any, for all children were marked. Observers were seated in the same place during the entire period of study. The observers were quiet through out the meals, to avoid distractions which may likely<sup>6</sup> affect the children's preference.

This procedure was repeated with the selected vegetables for four variables and rotated daily one by one for five times (replicates) as given in Appendix E.

b. Modification Phase:

Based on the experience, of preliminary phase, certain modifications were made. Children found it easy to decide on a choice among three varieties rather four. Further to get clearcut differences three varieties were sufficient.

In case of colour, consistency, and shape children could decide their preference on mere appearance. But in the case of taste, as appearance was kept constant, children were asked to verbalise the name of the variety, (among salt,

sour or pepper) in a soft voice, instead of pointing to a variety.

e. Experimental Phases

During the experimental phase, at one time three different varieties of one vegetable recipe were presented to elicit the preference as per details given in Table II and III; and planned menu in Appendix D.

Preparing, serving, observing and recording were, same as in the preliminary phase. The experimental period was extended to 24 weeks. The data thus collected were tabulated and analysed.

E. Analysis of Data

The data collected on preferences of children for selected test samples in school were analysed to find the priority given by children for each variety under each variable and also according to sex and age.

The data were also analysed for the constancy of children's preferences for the five replicates presented as for each test sample for each variable.

The preferences of children for selected vegetables at home, elicited through an interview

schedule to find the children's priority of preferences for each variety under each variable and also according to sex and age.

The preferences of children for the selected vegetables in the home, through an interview and in the nursery school through observations were compared for the extent of similarities and dissimilarities.

#### **IV RESULTS AND DISCUSSION**

The results of the study on food preferences of 32 preschool children, both at home and school in terms of colour, taste, consistency and shape, of selected vegetables are discussed under the following heads:

- A. Description of the Sample.**
- B. Reported preferences of 32 children at Home.**
- C. Observed preferences of the same 32 children in the nursery school.**
- D. Similarities and dissimilarities in the preferences shown in home and school.**

##### **A. Description of the Sample**

The 32 preschool children belong to parents pursuing profession such as medicine, law, teaching and studying; clerical posts, accountancy, business; and agriculture. The income levels of the parents range from Rs.250 to 2000 per month.

Regarding the educational level, it is noted that 48 per cent of parents were graduates, 22 per cent under-graduates and the rest below S.S.L.C.,

and evinced co-operation and interest in the programme of the nursery school. Details regarding the sample are given in Appendix H.

#### B. Reported Preferences of the 32 Children at Home

The preferences indicated at home by 32 preschool children for the selected vegetables as mentioned by the mothers in an interview, are recorded and discussed with reference to age and sex in terms of, (1) colour (2) taste, (3) consistency, and (4) shape.

##### (1) Colour

The <sup>e</sup>preferences of 32 children in colour for the selected vegetables at home are indicated in the Table IV.

**TABLE IV**  
**PREFERENCE IN COLOUR BY 32 CHILDREN AT HOME**

Name of preparations	Varieties.	Preference in numbers			Per-cent	't' Value
		Boys (15)	Girls (17)	Total		
Snakegourd Porial	NC	9	10	19	59	.0667
	AC	6	6	12	38	0.2739
	DC	-	1	1	3	1.030
Ladiesfinger Porial	NC	7	11	18	56	1.041
	AC	7	6	13	41	0.6560
	DC	1	-	1	3	2.626
Cauliflower Porial	NC	7	9	16	50	0.3548
	AC	6	8	14	44	0.4037
	DC	2	-	2	6	1.519

NC = Natural colour  
DC = Dark colour

AC = Additive colour (Turmeric)

\* 't' value is calculated by using the formula as suggested by Seetharaman (1965)<sup>99</sup>.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$\bar{x}_1, \bar{x}_2$  :- mean of the two samples

$\sigma_1, \sigma_2$  :- Standard deviation of two samples

$n_1, n_2$  :- Size of the two samples.

As evinced in Table IV according to mothers' opinion, 55 per cent of children have shown preference to natural coloured varieties. Additive and dark

colour varieties are opted by minority, in all the selected vegetables. Regarding sexes there is no statistically significant differences in their pattern of preference in all vegetable preparations.

As per details given in Appendix I regarding the age wise classification, it is noted natural colour is preferred by juniors for all vegetables being 69 average percent; by seniors for ladiesfinger and by kindergarten for snakegourd. Additive colours are preferred for the other two vegetables by seniors and kindergarten. Dark colour is not preferred by juniors and kindergarten, and least preferred by seniors.

## (2) Taste

Preferences of 32 children at home for the variable taste, are presented in the following Table V.

**TABLE V**  
**PREFERENCE IN TASTE BY 32 CHILDREN AT HOME**

Name of preparations	Varieties.	Preference in numbers			Per-cent	't' value
		Boys (15)	Girls (17)	Total		
Beans 'Porial'	Sour	3	5	8	25	0.6227
	Salt	9	12	21	66	0.6286
	Pepper	3	0	3	9	1.9360
Cabbage 'Porial'	Sour	6	4	10	32	1.010
	Salt	8	11	19	59	0.6566
	Pepper	1	2	3	9	0.5039
Carrot 'Salad'	Sour	11	11	22	69	0.5297
	Salt	2	4	6	19	0.7550
	Pepper	2	2	4	12	0.1327

From Table V it is viewed that children have varied taste preferences for different vegetables, namely salt for beans and cabbage and sour for carrot. In all vegetable preparations pepper (hot) taste is least preferred. Sweetening agents were not used in any home for vegetable preparations and bitter vegetables usually not given and hence these tastes were omitted in the preference study.

There is no statistical significant differences between the preference shown by the sexes. In girls the preference for beans porial of pepper is nil; whereas nine per cent of boys preferred it.

With reference to age grouping, it is ascertained from Appendix I that all groups prefer beans with salt, and carrot as sour. In the case of cabbage except kindergarten who prefer sour, other groups prefer salt taste. The percentage shows, high priority of preference, for salt in junior and senior, and sour for kindergarten groups.

(3) Consistency

Preference of 32 children in terms of consistency for selected vegetables at home are noted as in Table VI.

**TABLE VI**  
**PREFERENCE IN CONSISTENCY BY 32 CHILDREN AT HOME**

Name of preparation	Varieties	Preference in numbers			Per-cent	't' Value
		Boys (15)	Girls (17)	Total		
Cauliflower Kootu	Thick	7	12	19	59	1.409
	Semi-thick	6	5	11	35	0.6298
	Masial	2	-	2	6	1.519
Greens Kootu	Thick	6	8	14	44	0.4037
	Semi-thick	3	5	8	25	0.6227
	Masial	6	4	10	31	1.009
Snakegourd Kootu	Thick	7	9	16	50	0.0356
	Semi-thick	4	3	7	21	0.6139
	Masial	8	5	9	29	0.1930

It is viewed in Table VI that in all vegetables 53 per cent of children preferred thick variety, the next preference is for semi-thick in cauliflower (35 percent) greens (27 percent) and masial variety in snakegourd (29 per cent).

Sex-wise preferences are in equal distribution, except that cauliflower of masial variety was not preferred by any girl.

With regard to age, it is indicated in the Appendix I that generally in all vegetable preparations, the preference is for thick variety by all groups, except in greens kootu, where Kindergarten prefer it in semi-thick consistency. But highest average percent is for thick by all three groups.

(4) Shape:

Table VII shows the preference of children at home in term of shape for selected vegetables.

TABLE VII  
PREFERENCE IN SHAPE BY 32 CHILDREN AT HOME

Name of preparation	Varieties	Preference in numbers			Per-cent	't' value
		Boys (15)	Girls (17)	Total		
Carrot salad	Grated	13	13	26	81	0.7832
	Triangular bits	0	1	1	3	1.030
	Longsticks	2	1	3	10	0.7112
	Finer shreds	2	2	2	6	1.506
Beetroot salad	Grated	12	13	25	78	0.2421
	Triangular bits	-	1	1	4	1.030
	Longsticks	2	1	3	10	0.7112
	Finer shreds	1	2	3	8	0.5039
Cabbage salad	Grated	1	4	5	10	1.390
	Triangular bits	-	-	-	-	0
	Longsticks	2	0	2	3	1.519
	Finer shreds	12	13	25	78	0.2421

From Table VII it is evident that for carrot and beetroot the preference is for grated variety, and cabbage is preferred in finer shreds by 78 percent of children at home, as mothers indicated. The triangular bits and longsticks were seldom used in many homes.

There is no statistical differences in the preference between boys and girls with respect to any particular variety. In both sexes the highest preference is for grated carrot and beetroot, cabbage as finer shreds.

Regardless of age, all children in three groups, have shown preference to grated vegetable in all three salads as depicted in Appendix I.

#### C. Observed Preferences of the Same 32 Children in the Nursery School

The preference for selected vegetable preparation by 32 preschool children was observed in five replicates each. Though theoretically, total number of selection by 32 children for five times should be 160, yet due to absenteeism, or non-selection of the test foods and negligible waste of test foods, the total number of preference was always less.

Preference is discussed in terms of -

(1) Variables

(2) Constancy of preference

(1) Variable:

The preferences are discussed with reference to age and sex of children in terms of (a) colour, (b) taste, (c) consistency and (d) shape.

(a) Colour

Among the three choices offered namely, natural, with additives and dark colour, the preference indicated by the 32 preschool children is presented in Table VIII and more details in Appendix J.

TABLE VIII

PREFERENCE IN COLOUR BY 32 PRESCHOOL CHILDREN AS OBSERVED IN FIVE REPLICATES

Preparations	Varieties	Boys No.	Per-cent	Girls No.	Per-cent	Critical ratio 't'	Total number of times selected	Percent
Snakegourd 'Porial'	Natural colour	20	41	31	50	2.178*	51	46
	Additive colour	16	33	17	28	0.2461	33	30
	Dark colour	13	26	14	22	0.2721	27	24
Ladiesfinger 'Porial'	Natural colour	29	45	26	41	0.5720	55	43
	Additive colour	22	35	21	33	0.2156	43	34
	Dark colour	13	20	17	26	1.033	30	23
Cauliflower 'Porial'	Natural colour	21	43	29	44	1.600	50	42
	Additive colour	18	34	21	32	0.6792	39	33
	Dark colour	14	23	16	24	0.5164	30.	25

\* Significant at .05 level

Statistical analysis of data in Table VIII is based on the significance of the differences between two observed proportions, critical ration 't', found by employing the formula:

$$t = \frac{(P_1 - P_2)}{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$$

as given by Seetharaman (1965)<sup>99</sup>

Where:  $P_1$  - is proportion of children in first sample

$P_2$  - is the proportion of children in second samples

$n_1$  - is sizes of the first sample

$n_2$  - is size of second sample

$$P = \frac{n_1 P_1 + n_2 P_2}{n_1 + n_2}$$

$$q = 1 - p.$$

It may be inferred from Table VIII among all the three selected vegetables, natural colour is highly preferred, followed by additive colour and lastly dark colour. The difference is statistically significant and the choices seem to be consistent for both sexes regardless of the type of vegetables used (Appendix K). This concurs with Molesan's (1964)<sup>52</sup> observation that

natural and light colours, induce good appeal in children than dark colours. Girls show stronger preference to natural colour than boys.

Statistically it is proved that there is no difference in the preference of boys and girls except in snakegourd porial where girls are significantly higher in their preferences than boys.

Regarding the age of children, as given in Appendix I, the pattern of preference is for natural colour by all groups of children except in cauliflower, where the preference is for additive colour by Kindergarten group. It may be attributed, as cauliflower is white, Kindergarten children may like it with a little colour.

(b) Taste

The taste preference, noted by providing three varieties of 'porials' with three kinds of tastes namely salt, sour and pepper (hot) is presented in Table IX.

TABLE IX

PREFERENCE IN TASTE BY 32 PRE-SCHOOL CHILDREN AS OBSERVED IN FIVE REPLICATES

Preparations	Varieties	Boys No.	Per- cent	Girls No.	Per- cent	Critical ratio 't'	Total number of times selected	Percent
Beans 'Porial'	Sour	12	23	29	44	3.754**	41	35
	Salt	24	48	18	27	1.309	42	36
	Pepper (hot)	15	29	19	29	0.9701	34	29
Cabbage 'Porial'	Sour	21	34	22	35	0.2156	43	35
	Salt	31	51	27	48	0.7429	58	47
	Pepper (hot)	9	15	14	22	1.474	23	15
Carrot 'Salad'	Sour	22	37	29	40	1.354	51	39
	Salt	26	43	17	24	1.940	43	32
	Pepper (hot)	12	20	26	36	3.204**	38	29

\*\* Significant at .01 level

IX

Table/indicates, that the taste preference of children for salt or sour, are varied depending on the type of vegetables - being salt for beans and cabbage and sour for carrot. Pepper stands last in all types of vegetable preparations. This dislike of pepper corroborates with opinion of Spock et al (1959)<sup>55</sup> that children like foods that are not highly spiced.

There is no statistically significant difference in preference between salt and sour variety of beans porial. This reaction is in agreement with Breckenridge and Vincent (1965)<sup>38</sup> that the taste varies from food to food, in an individual. But in carrot there is definite high preference for sour which may be due to the association, or acquired taste, as the carrot salad is mostly taken with lime juice.

With respect to sex, boys consistently prefer salt irrespective of the vegetable, whereas girls prefer sour for beans and carrot and salt for cabbage. Statistically there is no significant difference in the preference of cabbage porial between boys and girls but statistically difference is noted in beans porial and carrot salad between sexes. Both the groups least preferred pepper in carrot salad and boys have shown less preference towards it than girls.

At different age groups, salt for beans porial is preferred by all children and in cabbage porial by juniors and seniors. Cabbage porial is preferred sour by Kindergarten. In the case of carrot salad juniors prefer it in sour taste, whereas the other two groups like it with pepper (Appendix I).

(e) Consistency

Preferences in consistency, noted through choice among three types of 'kootu', namely thick, semi-thick, and homogeneous 'masial', are as shown in Table X.

TABLE X

PREFERENCES IN CONSISTENCY BY 32 PRESCHOOL CHILDREN AS OBSERVED IN FIVE REPLICATES

Preparations	Varieties	Boys No.	Per-cent	Girls No.	Per-cent	Critical ratio 't'	Total number of times selected	Percent
Cauliflower 'Kootu'	Thick	24	40	23	34	0.2063	47	37
	Semi-thick	11	18	21	32	2.500*	32	25
	Masial	25	42	23	34	0.4083	48	38
Greens 'Kootu'	Thick	20	31	22	30	0.4364	42	31
	Semi-thick	16	25	17	23	0.2461	33	24
	Masial	28	44	34	47	1.075	62	45
Snakegourd 'Kootu'	Thick	17	30	22	34	1.132	39	32
	Semi-thick	20	35	12	18	2.000*	32	26
	Masial	20	35	31	48	2.178*	51	42

\* Significant at .05 level.

From Table X it is noted, 'masial' is given the highest preference regardless of type of vegetable, by both sexes. Presumably children prefer a homogeneous form. The least preferred is semi-thick variety, except in snakegourd 'kootu' which is given second preference by boys. However, statistically there is no significant difference in preference between any of the varieties provided.

No significant difference in choice of greens 'kootu' exists between among boys and girls; but differences occur in respect to snakegourd 'kootu', and cauli flower 'kootu', where boys have significantly higher preference than girls.

As evident from Appendix I 'masial' consistency is preferred by juniors for all 'kootus'. By seniors for greens and snakegourd the preference is for thick. But Kindergarten have opted thick 'kootu' for cauli-flower and greens and snakegourd in semi-thick consistencies.

(d) Shape:

The preference of children for shape is noted in three varieties of salad namely grated, triangular bits and longsticks as indicated in Table XI.

TABLE XI

PREFERENCE IN  $\chi^2$  SHAPE BY 32 PRESCHOOL CHILDREN AS  
OBSERVED IN FIVE REPLICATES

Preparations	Boys No.	Per- cent	Girls No.	Per- cent	Critical ratio 't.	Total number of times se- lected	Percent
Carrot 'salad'	24	46	30	52	.1924	54	49
Grated							
Triangular Bits	12	23	18	31	1.550	30	27
Longsticks	16	31	10	17	1.664	26	24
Beetroot 'salad'	27	42	35	51	.1436	62	47
Grated							
Triangular Bits	14	22	17	25	0.7619	31	24
Longsticks	23	36	16	24	0.1377	38	29
Cabbage 'salad'	21	40	39	55	1.600	60	49
Grated							
Triangular Bits	11	22	21	23	2.500*	32	26
Longsticks	20	38	10	22	2.582*	30	25

\* significant at .05 level.

Table XI denotes that children indicate highest preference towards grated vegetable, next to longsticks and the least to triangular bits. Statistically the preference of children for grated vegetable over the other varieties is significant. Sex-wise, girls consistently prefer grated as first and longsticks variety as least, boys have given higher preference to longsticks, and second place to grated.

With respect to sex, girls and boys shown specific significant statistical differences in the preferences for carrot and cabbage salads respectively.

Regarding the age groups, as depicted in Appendix I the preference is for grated shape by all three groups in all three salads.

Between varieties for boys and girls in the selected vegetable preparations not much significant differences is noted in colour, taste, consistency and shape (Appendix K).

## 2. Constancy in Preference:

The preferences of 32 preschool children, studied in terms of selecting any particular variety during five replications, has shown that 70 percent of children prefer a variety three or four times, whereas only, six percent, all five times as given in Appendix L. The constancy in preference, is discussed as in terms of (a) colour, (b) taste, (c) consistency and (d) shape.

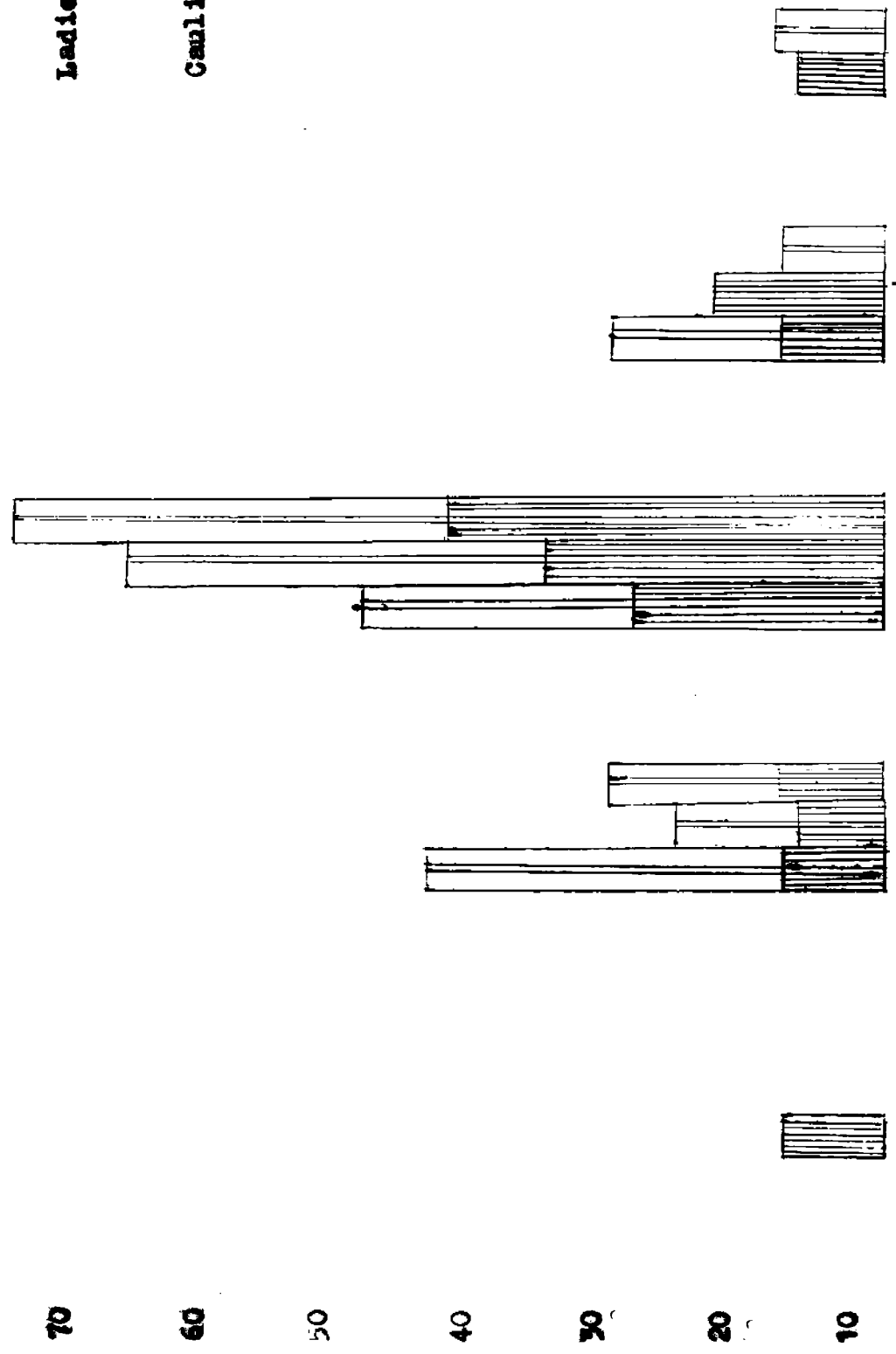
### (a) Colour:

The constancy of preference, by the children is discussed for the highly preferred variety namely natural colour, depicted in Figure V. In the distribution of component bar diagram the general choice is clustering around three times. In the case of snake-gourd 'porial', more girls have shown constancy than boys at three times. For ladiesfinger, boys seem to show high constancy even at fourth and fifth times, along with three times. In the case of cauli flower, constancy is shown by girls at four times also.

CONSTANCY OF PREFERENCE IN COLOUR

FIGURE V.

Snakegourd Porial Boys  
 Snakegourd Porial Girls  
 Ladiesfinger Porial Boys  
 Ladiesfinger Porial Girls  
 Cauliflower Porial Boys  
 Cauliflower Porial Girls



1 2 3 4 5  
 NUMBER OF TIMES

PERCENT

(b) Taste:

Constancy of preference in taste is varied with vegetables, namely it is salt for beans and cabbage for salt and <sup>sour</sup> for carrot, for ~~sour~~ taste, as shown in Figure VI. In the case of beans 'porial', children do not show definiteness in preference. For instance while 45 per cent of children selected it just twice, 22 percent of children had selected for four or five times.

For equal number of boys and girls preferences cluster around three times. Preferences for carrot salad is highest at four times, and 31 percent <sup>at</sup> three times is distributed, at three times.

80

70

60

50

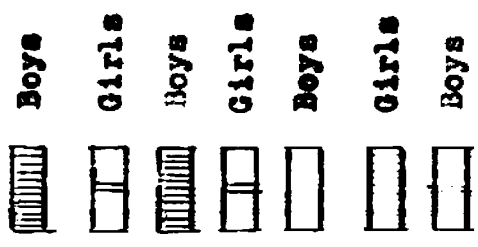
PERCENT

30

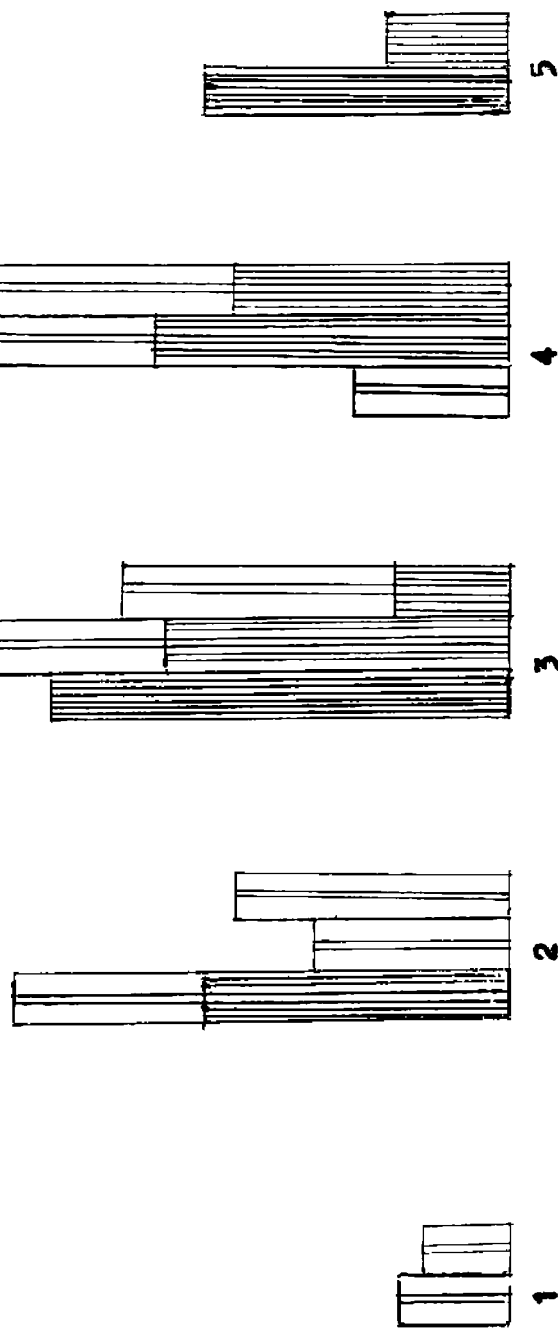
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10

CONSTANCY OF PREFERENCE IN TASTE



Beans  
Porial  
Cabbage  
Porial  
Carrot  
Salad.



NUMBER OF TIMES

FIGURE. VI

(c) Consistency:

The pattern of preference of children for the highly preferred variety - 'masial' is presented in Figure VII. In all cases the maximum preference was shown at three times.

For Cauli flower 'kootu' constancy of preferences is equally distributed at three times for both sexes. In greens 'kootu' the highest constancy is around three times whereas 12 percent of boys have selected all the five *times*. For snake-gourd, the frequency distribution, for constancy is more around four times being 53 percent.

CONSTANCY OF PREFERENCE IN CONSISTENCY

70 .

60 .

50 .

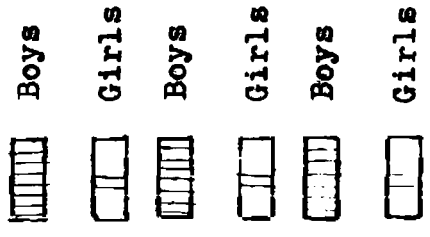
40 .

30 .

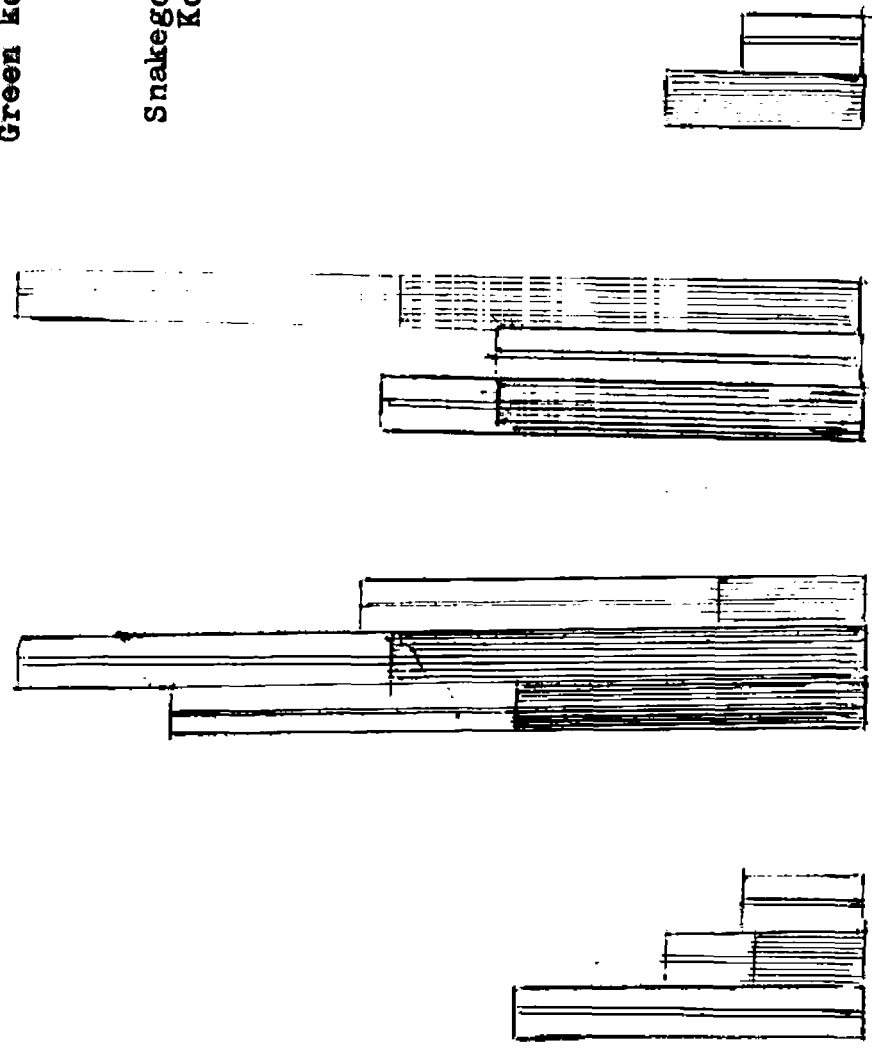
20 .

10 .

PERCENT



Cauliflower  
Kootu.  
Green kootu  
Snakegourd  
Kootu



5

4

3

2

1

NUMBER OF TIMES.

FIGURE . VII

(d) Shape:

For the highly preferred variety - grated vegetable - the constancy of preference is presented in Figure VIII. The distribution of constancy is higher at three times in all three vegetables. The choice is evenly distributed between sexes.

For beetroot salad even the higher constancy is for three times, the constancy of preference at four times is not so different as that of three times. Out of all 12 vegetable preparations, nine have the distribution of preference as clustering around three times and two around four times.

The constancy of preference viewed age-wise is around three times as 57, 31 and 160 per cent for juniors, seniors and Kindergarten respectively.

80

70

60

50

40

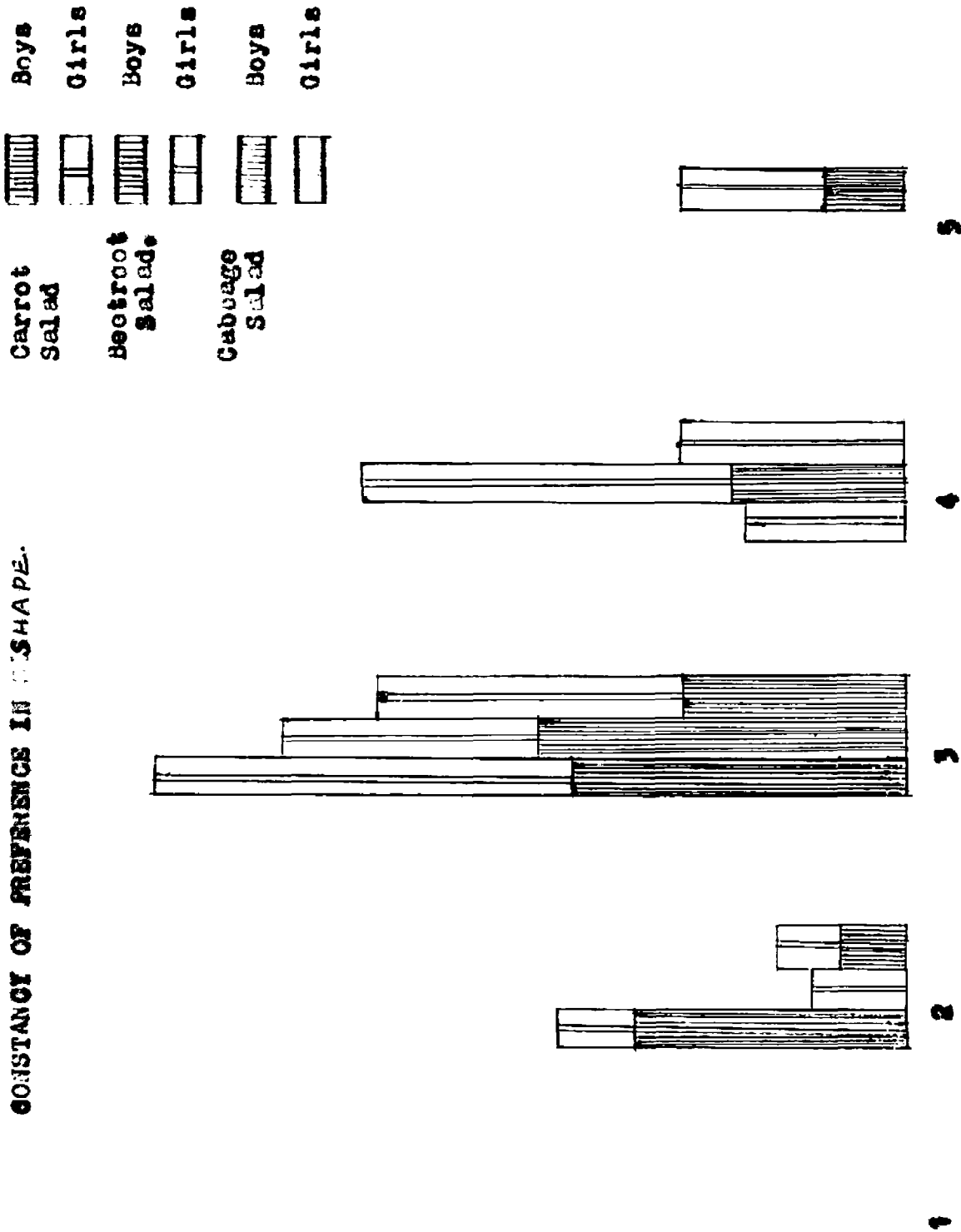
30

20

10

PERCENT

CONSTANCY OF PREFERENCE IN FISH SHAPE.



NUMBER OF TIMES

FIGURE VIII

**D. Similarities and Dissimilarities in  
Preferences shown in Home and  
School**

Similarities and dissimilarities of children's preferential reaction towards the selected 12 vegetable preparations at home and at school is discussed to note how far, children are sure of their preferences, to a particular variety, wherever provided.

1. Colour:

Similarity of preference in term of colour is presented in the Table XII.

TABLE XII

**SIMILARITIES OF PREFERENCE IN COLOUR BY 32  
PRESCHOOL CHILDREN BETWEEN HOME AND  
SCHOOL**

Preparations	Varie- ties	Total	Per- cent	Boys	Girls	't' value
Snakegourd 'porial'	NC	12		5	7	.6352
	AC	8		5	3	1.096**
	DC	1	66%	-	1	3.316
Ladiesfinger 'porial'	NC	14		5	9	1.914
	AC	8		6	2	1.912
	DC	-	69%	-	-	0
Cauli flower 'porial'	NC	11		5	6	.4285
	AC	8		4	4	0
	DC	3	69%	2	1	.6269

NC = Natural Colour      AC = Additive colour      Average - 68%  
DC = Dark colour

It is evident from Table XII, in all three vegetables 68 percent of children has shown similar preference. The maximum similarity in preference may be due to, familiarity with the preparation as indicated by Lowenberg (1948)<sup>59</sup>. As Crow and Crow (1958)<sup>100</sup> opine, the development of colour concepts begin clearly and at three to six years of age the child is selective about colour.

For all 12 selected vegetables only 32 percent of children have shown dissimilar preferences of colour between home and school.

Regarding the age, similarities in colour preferences exist to the extent of 79, 54 and 78 percents by juniors, seniors and Kindergarten respectively (Appendix I).

## 2. Taste:

In the case of taste the similarities in preference between home and school are presented in Table XIII.

TABLE XIII

69

## SIMILARITIES OF PREFERENCE IN TASTE BY 32 PRESCHOOL CHILDREN BETWEEN HOME AND SCHOOL

Preparations	Varieties	Total	Per- cent	Boys	Girls	't' value
Beans porial	Sour	6	47	2	4	1.330
	Salt	7		4	3	0.2777
	Pepper (hot)	2		2	-	1.632
Cabbage porial	Sour	3	50	2	1	0.8712
	Salt	12		5	8	0.8712
	Pepper (hot)	-		-	-	-
Carrot salad	Sour	10	50	3	7	.7987
	Salt	4		2	2	.5789
	Pepper (hot)	2		1	1	.2609
Average - 49%						

From Table XIII it is seen, 49% of children have similar preference at school and home; with respect to each of three selected vegetables. Regarding dissimilarity pattern Carmichael (1957)<sup>101</sup> concurs that the maximum dissimilarity occur in taste among children, since the immediate selection of food is made by vision rather than by taste and obviously, at home environment the appearance would have been different from the food at nursery school.

Sex-wise there is no significant statistical difference in their similarity pattern.

Regarding the age group, 57 percent by juniors, 39 percent by seniors and 67 percent by Kindergarten, show similarity in preference between home and schools as in Appendix I.

(3) Consistency:

Similarity of preference in consistency, by children is indicated in Table XIV.

TABLE XIV

SIMILARITY OF PREFERENCE IN CONSISTENCY BY 32  
PRESCHOOL CHILDREN BETWEEN HOME AND SCHOOL

Preparations	Variations	Total	Per- cent	Boys	Girls	't' value
Cauliflower 'kootu'	Thick	10	53	4	6	0.1178
	Semi- thick	5		1	4	1.262
	Masial	2		2	-	1.673
Greens 'kootu'	Thick	3	50	2	1	0.1683
	Semi- thick	5		3	2	0.1387
	Masial	8		5	3	0
Snakegourd 'kootu'	Thick	9	78	4	5	0.5975
	Semi- thick	6		4	2	0.8470
	Masial	8		4	4	0.1523
Average = 60%						

As Table XIV refers, 53 percent, 50 percent, and 78 percent of children have similar preferences at school and home to cauliflower, greens and snakegourd 'kootu' respectively. The highest similar preference goes to thick variety of cauliflower and snakegourd 'kootu'. In greens, 'masial' is highly preferred by both sexes.

It is noted that highest dissimilarity between school and home lies between thick and masial varieties where girls have more dissimilar reactions over boys. For semi-thick and masial variety least dissimilarity is shown by both sexes.

With respect to age groups 62 percent, 46 percent, and 76 percent respectively by three groups namely, junior, seniors and Kindergarten have shown similarity in their preferences between home and school as shown in Appendix I.

#### (4) Shape:

For shape variable the similarities of preferences in children is shown in the Table XV.

TABLE XV

SIMILARITIES OF PREFERENCE IN SHAPES BY 32  
PRESCHOOL CHILDREN BETWEEN HOME AND SCHOOL

Preparations	Varieties	Total	Per- cent	Boys	Girls	't' Value
Carrot salad	Grated	12	44	5	7	.2168
	Triangular Bits	-		-	-	0
	Longsticks	2		1	1	.2173
Beetroot salad	Grated	12	41	5	7	1.095
	Triangular Bits	-		-	-	0
	Longsticks	1		1	-	1.095
Cabbage salad	Grated	2	6	2	-	2*
	Triangular Bits	4		-	-	-
	Longsticks	2		2	-	2*

Average = 30%

\*Significant at .05 level

From Table XV it is inferred that 44 and 41 percent of school children have similar preference for carrot and beetroot at school and home, respectively, while only 6 percent of them prefer cabbage, similarly.

The similarity of preference for grated variety for carrot and beetroot both at home and school may be because they are accustomed to take in that form. No similarity exists for preference in triangular bits, by both sexes. In cabbage boys have shown significant preference for grated and longsticks over girls.

The children's preference for triangular bits and longsticks in school points out to their exploratory nature and liking for variety.

Regarding the age of children as shown in Appendix I, 46 percent, 21 percent and 26 percent respectively by juniors, seniors and Kindergarten have similar preferences between home and school.

Maximum dissimilarities of 69 percent of children in case of raw foods may be attributed to the unfamiliarity of varieties like triangular bits and longsticks at home. It may also reflect that the mothers do not provide raw vegetable often at home; or were not supplying interesting varieties of salad.

Similarity in the preferences of children between home and school in colour, taste and consistency may also be attributed to the similarity of environment,

both at home and school. The atmosphere of meal time in 97 percent homes, adduced by mothers, is democratic, happy and pleasant, (Appendix H), as recommended by Bradbury and Amidon (1946)<sup>47</sup> and Faegre and Andersen (1947).

Based on the results of this study on children's preferences, generally, it may be summed up that children prefer natural colour, salt or sour in taste, thick or masial in consistency depending on the type of the vegetable and grated vegetable for all salads, regardless of age or sex.

## V SUMMARY AND CONCLUSION

A study of food preferences in colour, taste, consistency and shape on the basis of 12 selected vegetable test samples, by a group of 32 preschool children was undertaken at Sri Avinashilingam Home Science College - Nursery School, Coimbatore. The corresponding preferences of the same children at home as reported by their mothers were also recorded and compared with the observations made in the nursery school.

The following are the conclusions:

1. With regard to preferences in colour, taste, consistency, and shape of vegetables, there was not much difference due to sex or age.

2. A considerable number of children was found to be constant with regard to their preferences as indicated by their choices among the five replicates.

3. High preference was shown by a significantly greater number of children for natural colours, both at home and at school (55 percent and 44 percent).

4. Salt taste was preferred in beans and cabbage by 65 and 43 percent of the children at home and school respectively; while sour taste was preferred for carrot by 69 percent, at home and 39 percent at School.

5. Thick consistency by 53 percent at home, and homogeneous 'gasial' consistency was preferred by 41 percent at school.

6. Grated shape for carrot and beetroot was preferred both at home (80 percent) and school (54 percent).

The findings of this study on 32 children will be helpful to meal planners of nursery schools and balwadis, dietetians in pediatric wards and mothers. ✓

It is hoped that more comprehensive investigation ✓ on larger number of children or longitudinal research will be undertaken on the basis of this study.

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**APPENDICES**

14

APPENDIX A

**SRI AVINASHILINGAM HOME SCIENCE COLLEGE, COIMBATORE-11**

**SCHEDULE FOR BACKGROUND**  
**INFORMATION REGARDING THE CHILDREN'S**  
**PREFERENCES FOR FOODS**

**Name of the child:**

**Sex:**

**Date of Birth:**

**Date of interview:**

**I. background of the Parents/ guardian / relatives.**

**Name of the Parents / guardian:**

**Age of the Parents / guardian:**

**Educational qualification:**

**Career**

**Full time:**

**Part time:**

**Address:**

**Family type:**

**Joint**

**Nuclear**

II. Practice followed in feeding the child:  
 (Please indicate the age for all methods)

- | Methods   | Age |
|---|-----|
| a. Completely fed b. the mother or other adult.       |     |
| b. With Partial help from the mother or other adults. |     |
| c. Self feeding.                                      |     |
| d. Others   |     |

III. Birth order of the child:

- |       |        |       |      |       |        |
|-------|--------|-------|------|-------|--------|
| First | Second | Third | Four | Fifth | Others |
|-------|--------|-------|------|-------|--------|

IV. Influences of other family members:

Name of the Family mem- bers	Relation- ship to the mother	Age	Edu- cat- ion	Occu- pa- tion	Month- ly in- come	Role in feeding the child
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

V. Methods of cooking; and your child's Preference

(Tick the method used)

Abbreviations used:

- B - Boiling;                      S - Stewing;                      St - Steaming;  
 F - Frying and                      O - Other methods .

Name of Vegetables	Name of the Preparation	Method of Cooking					Reasons For Preference				
		B	S	St	F	O	Colour	Taste	Consistency	Shape	Others if any

I. Leafy Vegetables

1. Agathi
2. Amaranth
3. Arai Keerai
4. Cabbage
5. Drumstick
6. Paruppu-Keerai
7. Others

II. Other Vegetables

1. Ashgourd
2. Brinjal
3. Beans
4. Cauliflower
5. Drumstick

- 
- 3. Ladies-finger
  - 7. Peas
  - 8. Snake-gourd
  - 9. Others

III. Roots and Tubers

- 1. Beetroot
  - 2. Carrot
  - 3. Onion
  - 4. Potato
  - 5. Radish (white)
  - 6. Radish (Red)
  - 7. Sweet potato
  - 8. Yam
  - 9. Others
- 

VI. Child's learning experience with new foods, after his enrollment at Nursery School. (Please tick any one)

Several Foods

Nil

Few Foods

Not Sure

Foods Newly liked	Reasons
1.	
2.	
3.	
4.	
5.	

**VII. Atmosphere of the Meal time**

How do you approach your child for taking foods at home?

(Please tick from the list)

- a. Reminding the child to eat properly
- b. Giving rewards for eating
- c. Urging or coaxing the child to eat
- d. Restricting pleasure while eating
- e. Providing a happy time
- f. Threatening the child with punishment or unpleasant consequences.
- g. Other methods to get your child eat.

**VIII. Common food Preferences of your child**

- 1.
- 2.
- 3.
- 4.
- 5.

**APPENDIX B**

via

**SRI AVINASHILINGAM HOME SCIENCE COLLEGE  
COIMBATORE.11**

**Date: 30-7-1966**

**Dear Mr./Mrs.**

You will be happy to know that we have a M.Sc.degree programme in Child Development and Family Relations. As part of their requirements for the degree course they have to do some original research in this area.

Two of our M.Sc.students are interested in studying 'The Food Preferences of Pre-school Children' (J.B.Kasthuri Bai) and 'The Child Rearing Practices followed by you' (Rama M.Atit). They will be coming to you to interview and record your responses for their questionnaires.

They will inform you in advance, about their coming. Kindly extend your cooperation to them.

**Thanking you,**

**Yours sincerely,**

**(Sd.) R.P.Devadas,**

**(Dr.(Mrs.)Rajamma P.Devadas)  
PRINCIPAL**

APPENDIX C

# RECIPES

## RECIPE FOR "PORIAL"

### Ingredients

Vegetable .. Beans, cabbage, Snakegourd, Ladiesfinger, Cauliflower and carrots-- 1500 grams.

Coconut scrapping 25 grams

Dhal (Red gram).. 120 grams

Oil .. 25 grams

Salt .. 15 grams

### Forseasoning

Mustard .. 5 grams

Bengal gram dhal 5 grams

Amount of water needed.. Nil

### Time of cooking

Steaming .. 15 minutes

Seasoning .. 5 minutes

Total .. 20 minutes

### Method(Standard)

- (1) The vegetable is steamed and dhal is steamed separately.
- (2) Oil is heated and mustard and Bengalgram dhal is fried.
- (3) Steamed vegetable is added and mixed well.
- (4) Cooked dhal and coconut scrapping and salt is added to the vegetable and removed the fire.

### For Variations: 1. Colour

The steamed vegetable is divided into three parts.

Natural colour - Standard.

Additive colour - five grams of turmeric powder added at step:2

Dark Colour - continued frying for five minutes after step: 4

## **2. Taste**

### **For Variations:**

The fried porial is divided into three parts, after step 4.

- Sour Taste .. 10 grams of lime juice is added.
- Salt Taste .. 5 grams of salt is added.
- Pepper (Hot) Taste.. 10 grams of pepper powder is added.

APPENDIXRECIPES FOR "KOOTU"Ingredients:

Vegetable	..	Cauliflower, Greens or Snake gourd	..	1250 grams.
Redgram dhal	..	..	..	120 grams
Salt	..	..	..	15 grams
Coconut scraping	..	..	..	25 grams

Seasoning:

Oil	..	..	..	30 grams
Bengal gram dhal	..	..	..	10 grams

Amount of water .. Nil

Time of cooking

Steaming	..	25 minutes
Stewing	..	10 minutes
Total	..	35 minutes

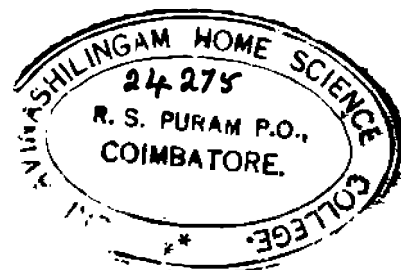
Method

- (1) Steam dhal till tender and keep aside.
- (2) Steam vegetable in the steamer till it becomes three-fourth cooked.
- (3) Add the vegetable to the dhal and cook for 5 minutes.
- (4) Add coconut scrapings and salt.
- (5) Heat oil and season with bengal gram dhal.

For Variations:

The cooked vegetable and dhal contents is divided into three parts after step: 3.

- Thick: Continued cooking for five minutes.
- Semithick: Continued cooking for five minutes by adding 30 ml. of water.
- Masial: Continued cooking for five minutes by adding 10 ml. of water and mashed.



RECIPE FOR "SALAD"Ingredients:

Vegetable .. (Carrot, beetroot and cabbage)  
750 grams.

Lime Juice .. 15 grams.

Salt .. 15 grams.

Method:

- (1) Wash and divide the vegetable bits.
- (2) Cut into desired shapes.
- (3) Add salt and Lime.
- (4) Mix well.

For Variations:

Shape:  
At step: 2

- A. Grated.
- B. Cut into triangular bits.
- C. Cut into long sticks.

**APPENDIX D**  
**MENUS SELECTED FOR THE STUDY**

**INCORPORATION OF TEST SAMPLES INTO NURSERY SCHOOL**

**MENU FOR THE STUDY**

	I Set	II Set	III Set
<b>I Day</b>	Tomato Rice *Snakegourd Porial Sprouted green- gram salad. Curds Rice Curds	Pulse Rice *Ladiesfinger Porial Tomato Rice Curds Rice Curds	Coconut Rice *Cauliflower Porial Tomato Salad Curds Rice Curds
<b>II Day</b>	Line Rice *Cauliflower Kootu Beetroot salad Curds Rice Curds	Raddish Rice *Greens Kootu Carrot salad Curds Rice Curds	wheat Pongal *Snakegourd Kootu Brinjal Porial Curds Rice Curds
<b>III Day</b>	wheat Pongal *Beans Porial Onion Salad Curds Rice Curds	Coconut Rice *Cabbage Porial Sprouted Green- gram salad Curds Rice Curds	Line Rice *Carrot Salad Greens Pachadi Curds Rice Curds
<b>IV Day</b>	Pulse Rice *Carrot Salad Greens Porial Curds Rice Curds	Line Rice *Beetroot Salad Cauliflower Porial Curds Rice Curds	Pulse Rice *Cabbage Salad Pumpkin Porial Curds Rice Curds
<b>V Day</b>	Sambar Rice *Snakegourd Porial Ladiesfinger Pachadi Curds Rice Curds	Tomato Rice *Ladiesfinger Porial Onion Salad Curds Rice Curds	Tomato Rice *Cauliflower Porial Onion Salad Curds Rice Curds
----- *Test Samples -----			

**APPENDIX E**

**ROTATION OF VARIABLES AND VEGETABLES**

**I Set**

Days	Selected variable	Vegetable preparations
Monday	Colour	Snakegourd Porial
Tuesday	Consistency	Cauliflower Kootu
Wednesday	Taste	Beans Porial
Thursday	Size - Shape	Carrot Salad
Friday	Colour	Snake Gourd Porial

**II Set**

Days	Selected variable	Vegetable preparation
Monday	Colour	Ladiesfinger Porial
Tuesday	Consistency	Greens Kootu
wednesday	Taste	Cabbage Porial
Thursday	Size-shape	Beetroot Salad
Friday	Colour	Ladiesfinger Porial

**III Set**

Monday	Colour	Cauliflower Porial
Tuesday	Consistency	Snakegourd Kootu
Wednesday	Taste	Carrot Salad
Thursday	Size - shape	Cabbage salad
Friday	Colour	Cauliflower Porial

**APPENDIX P**

**EQUIPMENT LIST  
(for Cooking)**

Equipment	Material	Description	Size in (cms)	Purpose	Number
Cooker	Brass	Brass outer utensil for steam and four inner tin lined utensils for cooking.	H: 22.5 D: 22.5	To cook vegetables rice and dhal	1
Frying Pan	Aluminium	A round frying pan half sphere in shape.	H: 7.7 D: 22.5	To fry the vegetables while preparing poriala.	1
Knife	Stainless Steel	Sharp	L: 23	To cut vegetables	1
Chopping Board	Wood	Rectangular in shape	L: 39.5 W: 25.5	To keep as a base while cutting	1
Trays	Stainless steel	Plain	L: 33 W: 22.5	To keep the serving vessels while serving	2

(Contd.)

Equipment	Material	Description	Size in (cms)	Purpose	Number
Serving utensils	Stainless steel	Bowls	H: 6.5 W: 13.2	To keep the test samples while serving.	6
Teaspoons	Stainless steel	-	-	For serving the test foods.	6
A set of standard measuring spoons	Stainless steel	-	-	To serve the test food equally in all plates before children come.	1 set.

D - Diameter  
H - Height  
L - Length

**APPENDIX G**

## RECORDING SHEET

Date:

Time:

Number of children present:

Preparation - Snakegourd  
Porial

S.No.	Name of the Children.	Colour			Plate waste
		Natural	with additives	Dark	
1.					
2.					
3.					
4.					
5.					

\* For example one variable namely colour is given.

**APPENDIX H**

DETAILS OF SUBJECTS

1. Parental Occupation

Types of Occupation	Number	
	F	M
1. Agriculturist	7	-
2. Business (Private)	6	-
3. Professional People:		
a. Teaching	3	5
b. Officers	8	-
c. Physician	1	-
d. Advocate	3	-
e. Engineer	1	-
4. Clerical jobs	2	-
5. Industrialists	1	-
6. Student (Studying)	1	-
<b>Total</b>	<b>32</b>	<b>5</b>

N. B: F - Father  
M - Mother

## ATMOSPHERE OF MEAL TIME

Methods followed	Boys		Girls		Total
	No.	%	No.	%	
a. Reminding the child to eat properly.	7	47	1	6	8
b. Giving rewards for eating.	2	13	3	18	5
c. Urging or coaxing the child to eat.	-	-	4	23	4
d. Restricting the pleasure while eating.	-	-	-	-	-
e. Providing a happy time.	5	33	6	35	11
f. Threatening the child with punishment.	-	-	1	6	1
g. <u>Other methods</u>					
leaving the child to eat as he likes	1	7	2	12	3
serving by himself					
<b>Total</b>	<b>15</b>	<b>100</b>	<b>17</b>	<b>100</b>	<b>32</b>

**APPENDIX I**

AGEWISE CLASSIFICATION OF PREFERENCE

1. PREFERENCES IN COLOUR, TASTE, CONSISTENCY AND SHAPE OF SELECTED VEGETABLES BY 32 CHILDREN AT HOME.

Preparation	Juniors		Seniors		Kindergarten				
	VARIETIES								
	Natural Colour	Dark Colour	Additive Colour	Dark Colour	Natural Colour	Dark Colour			
Snakegourd	10	4	5	7	1	4	1	1	-
Porial	8	6	8	4	1	2	3	3	-
Ladies finger	11	3	5	6	2	-	5	5	-
Porial	69	31	46	44	10	40	60	60	-
Average Per cent									
Beans Porial	4	10	3	8	2	1	3	3	1
Cabbage	2	11	5	7	1	3	1	1	1
Porial	11	3	7	3	3	4	4	-	1
Carrot Saled	41	57	2	46	15	53	27	27	20
Average Per cent									
Cauliflower	7	6	9	3	1	4	1	1	-
Kootu	8	2	6	3	4	-	3	3	2
Snake-gourd	6	4	7	2	4	3	1	1	1
Kootu	48	30	26	21.0	21	47	33	33	7
Average Per cent									

Contd.....

Contd.....

Preparation	Juniors		Seniors		Kindergarten							
	VARIETIES											
	Trian-Long bits	Long sticks	Trian-Long bits	Long sticks	Trian-Long bits	Long sticks						
Carrot salad	13	-	1	-	9	-	0	4	4	1	2	2
Beetroot Salad	13	-	1	-	9	-	1	3	3	1	1	-
Cabbage Salad	1	-	1	12	2	-	1	10	2	-	-	3
Average per- cent	64	-	7	29	50	-	5	43	60	13.0	20	32

2. PREFERENCES IN COLOUR, TASTE, CONSISTENCY AND SHAPE OF SELECTED VEGETABLES BY 32 CHILDREN AT SCHOOL.

Preparations	JUNIORS				SENIORS				KINDER-GARTEN				Total No.	
	Natural Colour	Additive Colour	Dark Colour	Natural Colour	Additive Colour	Dark Colour	Natural Colour	Additive Colour	Dark Colour	Natural Colour	Additive Colour	Dark Colour		
Snakegourd Porial	27	12	12	14	13	12	10	8	3	111				
Ladies finger Porial	29	12	12	20	17	13	6	5	7	128				
Cauliflower Porial	30	16	14	4	22	8	16	1	8	119				
Average Per centage	24.1	13.7	10.6	10.6	14.5	0.9	8.9	3.8	0.5					
Beans Porial	13	25	11	15	16	13	10	2	5	117				
Cabbage Porial	19	23	16	13	28	4	12	8	3	124				
Carrot Salad	30	21	5	15	16	21	6	6	12	132				
Average per cent	13.3	18.2	8.3	11.3	15.9	10.0	7.9	4.2	0.5					
	Thick	Semithick	Masial	Thick	Semi-Thick	Masial	Thick	Semi-Thick	Masial					
Cauliflower Kootu	18	17	27	18	9	15	11	6	6	127				
Greens Kootu	20	13	34	10	12	22	12	8	6	137				
Snakegourd Kootu	15	12	27	19	6	21	5	14	3	122				
Average per cent	12.9	10.8	22.8	12.1	6.9	14.9	7.2	7.2	3.8					
	Grated	Triangu- lar Bits	Long Sticks	Grated	Triangu- lar Bits	Long Sticks	Grated	Triangu- lar Bits	Long Sticks					
Carrot Salad	16	14	14	25	10	12	13	3	3	110				
Beetroot Salad	26	11	29	17	15	6	19	5	3	131				
Cabbage Salad	26	18	10	16	9	4	18	5	16	122				
Average Per cent	18.7	11.8	14.6	15.9	9.3	6.0	13.8	3.5	6.0					

3. SIMILARITIES OF PREFERENCES IN COLOUR, TASTE, CONSISTENCY AND SHAPE BY 32 PRE SCHOOL CHILDREN BETWEEN HOME AND SCHOOL.

Preparations	Juniors				Seniors				Kindergarten			
	Natural Colour	Additive Colour	Dark Colour	Natural Colour	Additive Colour	Dark Colour	Natural Colour	Additive Colour	Dark Colour	Natural Colour	Additive Colour	Dark Colour
Snakegourd Porial	6	4	-	3	3	1	3	3	1	-	-	
Ladiesfinger Porial	5	6	-	4	-	1	5	5	0	-	-	
Cauliflower Porial	6	3	1	2	5	2	3	3	-	-	-	
Per cent	41	36	2	23	21	10	72	6.7	-	-	-	
	Sour	Salt	Pepper	Sour	Salt	Pepper	Sour	Salt	Pepper	Sour	Pepper	
Beans Porial	3	5	1	1	2	-	2	-	-	2	1	
Cabbage Porial	2	6	-	-	6	-	1	1	1	-	-	
Carrot Salad	5	2	-	2	4	-	3	-	-	3	2	
Per cent	24	31	2	8	31	-	40	7	7	20	20	
	Thick	Semithick	Masial	Thick	Semithick	Masial	Thick	Semithick	Masial	Thick	Semithick	Masial
Cauliflower Kootu	2	2	2	5	2	-	3	1	-	-	-	
Greens Kootu	3	1	5	-	1	2	-	3	3	1	1	
Snakegourd Kootu	4	3	4	4	1	3	1	2	2	1	1	
	Grated	Triangu- lar Bits	Long Sticks	Grated	Triangu- lar Bits	Long Sticks	Grated	Triangu- lar Bits	Long Sticks	Grated	Triangu- lar Bits	Long Sticks
Carrot Salad	7	-	2	4	-	-	1	-	-	-	-	
Beetroot Salad	6	-	1	3	-	-	3	-	-	-	-	
Cabbage Salad	2	-	1	-	-	1	-	-	-	-	-	
Percent	36	-	10	18	-	3	26	-	-	-	-	

APPENDIX J

OBSERVED PREFERENCES OF 32 CHILDREN DURING FIVE REPLICATES  
OBSERVED PREFERENCES IN COLOUR

Sub- jects	Snakegourd 'Porial'					Ladies finger 'Porial'					Gauli flower 'Porial'				
	- Replicates -					- Replicates -					- Replicates -				
	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)
<b>Boys</b>															
B <sub>1</sub>	a	a	a	a	1	2	2	a	2	2	2	2	a	2	a
B <sub>2</sub>	1	2	2	2	2	1	1	1	1	a	a	2	2	2	2
B <sub>3</sub>	a	a	3	1	3	2	NP	1	3	3	NP	2	2	2	1
B <sub>4</sub>	1	1	a	1	1	1	1	1	a	a	3	3	3	3	a
B <sub>5</sub>	2	2	a	1	a	3	1	1	1	a	a	1	1	NP	1
B <sub>6</sub>	2	2	1	a	3	1	1	1	3	1	a	1	a	1	a
B <sub>7</sub>	a	1	1	1	a	1	2	2	a	2	NP	2	2	2	a
B <sub>8</sub>	3	2	2	2	2	3	3	2	2	2	a	3	3	3	2
B <sub>9</sub>	3	3	a	3	3	2	3	2	2	NP	a	1	3	1	1
B <sub>10</sub>	a	2	a	a	2	1	1	1	1	1	a	1	3	3	a
B <sub>11</sub>	1	1	1	NP	3	1	2	1	1	a	1	1	2	1	NP
B <sub>12</sub>	2	NP	1	1	1	3	2	3	2	2	2	1	2	2	1
B <sub>13</sub>	a	1	a	NP	1	a	3	a	1	1	a	a	1	1	1
B <sub>14</sub>	3	3	3	1	1	2	2	3	2	2	a	3	a	3	3
B <sub>15</sub>	2	2	3	a	a	3	3	1	1	1	a	1	3	1	1

Contd.....

Sub-jects	Snakegourd 'Porial'					Ladies finger 'Porial'					Gauli flower 'Porial'				
	Replicates -					Replicates -					Replicates -				
	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)
<b>Girls</b>															
G <sub>1</sub>	1	3	1	2	a	NP	1	1	3	1	2	3	3	3	2
G <sub>2</sub>	1	2	a	a	2	NP	2	1	1	1	1	1	1	a	a
G <sub>3</sub>	1	2	2	2	a	3	a	a	3	3	2	2	a	2	2
G <sub>4</sub>	a	a	1	1	2	3	NP	2	2	a	1	a	a	1	1
G <sub>5</sub>	1	1	2	a	1	1	3	3	3	1	1	2	2	2	2
G <sub>6</sub>	NP	2	1	1	1	2	a	2	3	2	1	3	3	3	a
G <sub>7</sub>	1	1	1	1	NP	1	a	NP	1	a	1	a	a	3	3
G <sub>8</sub>	a	NP	2	2	3	3	a	1	2	3	a	1	2	2	2
G <sub>9</sub>	3	1	3	a	a	a	3	2	3	a	1	3	1	3	1
G <sub>10</sub>	1	1	1	2	1	1	1	2	3	1	a	3	1	1	1
G <sub>11</sub>	2	2	2	1	2	1	1	3	NP	1	2	1	2	2	2
G <sub>12</sub>	1	3	3	3	3	2	2	3	2	2	a	3	3	3	3
G <sub>13</sub>	1	1	3	1	a	a	a	1	1	2	a	a	a	1	1
G <sub>14</sub>	1	NP	2	1	a	NP	1	1	1	2	a	a	1	1	2
G <sub>15</sub>	1	1	3	a	2	2	2	2	NP	a	a	a	1	1	1
G <sub>16</sub>	a	3	3	a	a	1	a	a	1	1	a	2	2	2	3
G <sub>17</sub>	a	3	a	a	3	2	2	3	2	3	1	1	1	1	1

1. Natural colour

a - absent

2. Additive colour (turnerie)

NP - Not Preferred

3. Dark colour

## OBSERVED PREFERENCES IN TASTE

Sub - jects	Beans Porial Replicates					Cabbage Porial Replicates					Carrot mixed Replicates				
	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)
B <sub>1</sub>	a	a	a	2	2	2	2	a	2	2	2	a	2	2	a
B <sub>2</sub>	3	1	1	1	3	1	2	2	2	2	3	3	3	3	3
B <sub>3</sub>	a	a	1	NP	1	2	2	a	1	2	1	2	2	2	a
B <sub>4</sub>	1	3	1	3	3	1	1	1	a	a	a	3	3	3	a
B <sub>5</sub>	1	a	a	a	a	2	1	1	1	NP	2	1	1	2	2
B <sub>6</sub>	3	2	3	1	3	3	3	3	3	a	1	1	3	1	1
B <sub>7</sub>	a	a	2	2	2	2	NP	2	a	2	2	1	a	a	2
B <sub>8</sub>	a	3	3	3	1	2	1	1	1	NP	2	2	2	a	2
B <sub>9</sub>	NP	2	2	1	NP	1	3	3	3	NP	a	2	2	2	a
B <sub>10</sub>	a	a	a	a	3	2	1	1	1	1	a	1	1	1	2
B <sub>11</sub>	2	2	1	NP	2	2	3	2	NP	2	2	1	1	1	1
B <sub>12</sub>	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
B <sub>13</sub>	a	a	3	2	3	a	a	2	2	2	a	2	a	NP	2
B <sub>14</sub>	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2
B <sub>15</sub>	2	2	2	a	a	1	1	a	3	1	2	1	3	3	3

Contd....

Sub- jects	Beans Porial Replicates					Cabbage Porial Replicates					Carrot Salad Replicates				
	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)
<b>Girls</b>															
G <sub>1</sub>	1	1	a	1	a	a	1	a	1	3	1	1	1	3	1
G <sub>2</sub>	2	2	2	a	2	1	3	2	2	2	2	1	2	2	a
G <sub>3</sub>	1	1	1	2	2	a	2	a	a	2	3	a	3	3	3
G <sub>4</sub>	a	a	a	1	1	1	1	a	3	a	a	a	3	3	3
G <sub>5</sub>	2	3	2	3	3	2	1	2	2	2	3	3	3	3	2
G <sub>6</sub>	1	2	3	1	1	1	3	3	3	3	2	2	1	NP	a
G <sub>7</sub>	1	1	1	a	1	3	2	a	2	2	1	a	1	1	2
G <sub>8</sub>	a	a	3	2	3	3	2	2	2	2	1	1	3	1	1
G <sub>9</sub>	1	1	1	1	1	a	1	1	1	1	3	3	3	3	1
G <sub>10</sub>	1	3	3	3	3	2	NP	2	1	2	1	1	1	2	3
G <sub>11</sub>	1	1	2	1	3	1	3	2	a	3	1	1	1	1	3
G <sub>12</sub>	3	3	3	2	3	3	a	3	1	3	2	2	2	2	2
G <sub>13</sub>	2	1	1	a	a	a	NP	1	2	2	a	a	a	1	1
G <sub>14</sub>	NP	3	2	1	2	a	2	a	1	1	a	a	1	3	1
G <sub>15</sub>	1	2	3	a	1	1	1	1	NP	a	a	2	2	2	3
G <sub>16</sub>	2	3	3	a	a	a	2	a	a	a	3	1	1	1	1
G <sub>17</sub>	a	a	a	a	2	1	2	a	2	2	3	2	3	3	3

1 - Sour,

a - absent

2 - Salt

3 - Pepper (Hot)

NP - Not Preferred.

OBSERVED PREFERENCES IN CONSISTENCY

Sub-jects	Cauliflower kootu					Green kootu					Snake-ourd kootu				
	Replicates					Replicates					Replicates				
	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)
<b>Boys</b>															
B <sub>1</sub>	a	3	3	1	3	3	1	2	2	2	NP	2	2	a	a
B <sub>2</sub>	a	3	3	3	3	2	2	2	2	1	2	2	2	a	2
B <sub>3</sub>	3	3	3	2	3	2	3	a	a	3	1	3	3	3	1
B <sub>4</sub>	2	2	a	3	2	3	1	3	a	3	2	2	2	a	2
B <sub>5</sub>	a	a	a	1	1	1	1	1	2	a	2	1	a	2	2
B <sub>6</sub>	1	1	1	a	a	2	3	2	3	3	a	1	1	a	1
B <sub>7</sub>	3	3	2	1	3	3	3	2	a	3	2	3	a	2	2
B <sub>8</sub>	3	3	3	3	1	2	3	a	3	3	a	1	1	2	1
B <sub>9</sub>	2	1	3	2	a	2	3	3	3	a	NP	3	3	3	3
B <sub>10</sub>	a	2	2	2	1	1	1	a	NP	1	2	1	1	a	1
B <sub>11</sub>	a	1	1	1	NP	1	1	1	1	a	a	NP	2	1	2
B <sub>12</sub>	1	1	1	3	1	3	3	3	3	3	3	3	3	a	3
B <sub>13</sub>	3	3	2	a	3	a	1	2	1	1	3	a	3	3	3
B <sub>14</sub>	1	1	3	1	1	3	3	3	3	3	3	3	3	a	3
B <sub>15</sub>	a	1	1	NP	1	1	1	1	2	1	1	1	1	1	NP

Sub - jects	Cauliflower kootu Replicates					Greens kootu Replicates					Snakegourd kootu Replicates				
	(1)	(11)	(111)	(1v)	(v)	(1)	(11)	(111)	(1v)	(v)	(1)	(11)	(111)	(1v)	(v)
Girls															
G <sub>1</sub>	3	3	3	2	3	3	a	1	3	3	3	1	1	1	NP
G <sub>2</sub>	a	a	1	a	1	2	1	1	3	1	3	a	2	a	2
G <sub>3</sub>	NP	3	3	3	1	1	1	a	1	3	1	1	a	1	1
G <sub>4</sub>	1	1	1	1	1	1	1	1	1	1	a	a	a	1	1
G <sub>5</sub>	3	3	2	2	2	2	3	3	3	3	3	3	2	3	3
G <sub>6</sub>	1	2	a	a	2	3	2	2	2	3	1	3	2	a	2
G <sub>7</sub>	1	1	2	1	1	3	3	a	2	3	a	1	1	a	1
G <sub>8</sub>	3	1	3	1	1	1	3	3	3	3	3	3	3	3	3
G <sub>9</sub>	1	2	2	2	1	a	1	2	2	2	a	2	2	2	2
G <sub>10</sub>	2	3	3	3	NP	3	3	a	1	3	2	3	3	a	3
G <sub>11</sub>	3	3	3	1	1	2	2	1	3	2	2	3	3	3	3
G <sub>12</sub>	2	2	2	2	2	1	3	1	1	1	1	1	1	1	1
G <sub>13</sub>	3	a	3	2	a	a	3	3	3	2	1	a	a	a	1
G <sub>14</sub>	NP	2	2	2	NP	1	3	3	3	3	3	a	3	a	1
G <sub>15</sub>	NP	3	a	a	3	2	1	3	3	a	a	a	3	3	3
G <sub>16</sub>	a	a	3	a	3	a	a	2	a	3	a	2	3	3	3
G <sub>17</sub>	a	1	2	1	1	3	2	a	2	2	1	3	3	3	3

1 - Thick

a - absent

2 - Semi-thick

NP - Not Preferred

3 - Maxial

## OBSERVED PREFERENCES IN SHAPE

Sub - jects	Carrot salad Replicates					Beetroot salad Replicates					Cabbage salad Replicates				
	(1)	(11)	(111)	(1v)	(v)	(1)	(11)	(111)	(1v)	(v)	(1)	(11)	(111)	(1v)	(v)
Boys															
B <sub>1</sub>	a	a	3	3	3	3	NP	3	3	3	3	3	3	1	a
B <sub>2</sub>	2	2	1	a	a	2	1	a	2	2	2	2	2	3	2
B <sub>3</sub>	a	a	1	1	1	1	1	NP	a	1	1	1	3	1	3
B <sub>4</sub>	1	1	NP	3	1	1	3	3	2	a	2	2	2	2	a
B <sub>5</sub>	NP	1	a	a	1	1	1	1	1	3	a	NP	3	NP	3
B <sub>6</sub>	2	1	3	1	1	1	1	3	1	3	a	3	a	3	3
B <sub>7</sub>	a	a	a	2	2	3	2	3	1	a	1	3	1	a	NP
B <sub>8</sub>	2	2	2	2	2	2	1	2	2	1	2	1	a	a	2
B <sub>9</sub>	3	1	3	3	a	3	2	3	3	3	1	1	1	1	1
B <sub>10</sub>	a	a	3	1	1	3	3	3	3	a	1	a	1	1	a
B <sub>11</sub>	a	1	1	3	a	1	1	1	1	3	1	NP	1	2	1
B <sub>12</sub>	1	1	3	3	3	3	1	1	1	3	3	a	3	3	a
B <sub>13</sub>	1	1	a	a	1	2	a	a	2	1	1	a	NP	a	1
B <sub>14</sub>	3	3	3	1	1	a	1	1	1	3	3	3	3	3	3
B <sub>15</sub>	2	2	a	a	2	2	2	a	2	1	a	a	a	2	a

Contd.....

Sub - jects	Carrot salad					Beetroot salad					Cabbage salad				
	Replicates					Replicates					Replicates				
	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)	(i)	(ii)	(iii)	(iv)	(v)
Girls															
G <sub>1</sub>	1	1	2	a	NP	a	3	2	2	1	2	NP	2	a	42
G <sub>2</sub>	2	2	a	a	NP	3	3	3	a	3	a	1	3	3	3
G <sub>3</sub>	2	2	3	3	2	1	1	a	1	1	1	1	1	1	1
G <sub>4</sub>	a	a	1	1	1	1	2	1	1	1	3	1	3	1	1
G <sub>5</sub>	3	2	3	1	3	2	3	2	2	3	2	2	a	2	2
G <sub>6</sub>	a	1	1	1	2	3	1	1	a	1	a	1	1	1	a
G <sub>7</sub>	1	1	a	1	a	2	3	a	1	1	1	1	3	1	1
G <sub>8</sub>	a	a	2	2	1	2	3	1	1	1	3	1	1	1	1
G <sub>9</sub>	1	1	3	1	1	a	1	1	1	1	1	1	1	1	1
G <sub>10</sub>	NP	3	NP	3	2	2	2	2	1	1	1	1	2	1	1
G <sub>11</sub>	2	1	NP	3	2	1	1	2	2	2	2	2	2	2	2
G <sub>12</sub>	1	1	1	1	2	2	3	2	a	2	2	2	2	2	2
G <sub>13</sub>	2	1	1	a	1	a	a	a	a	3	1	a	a	a	1
G <sub>14</sub>	NP	1	3	1	4	1	3	1	1	NP	2	3	2	2	NP
G <sub>15</sub>	a	2	NP	a	a	1	1	1	1	a	a	a	1	1	a
G <sub>16</sub>	a	2	2	a	a	a	3	a	a	a	a	1	1	1	3
G <sub>17</sub>	a	a	a	a	3	1	3	3	1	3	a	1	1	1	3

1 - Grated.

2 - Triangular bits,

3 - Long sticks

a - absent

NP - Not Preferred

**APPENDIX K**  
**CONSTANCY IN PREFERENCES**

CONSTANCY IN COLOUR PREFERENCE OF PRESCHOOL CHILDREN

	Snakegourd porial	Ladies finger porial	Cauliflower porial	Number of
	Natural Addi- tive colour	Dark colour	Natural Addi- tive colour	Dark colour
Boys	1	-	-	-
Girls	-	-	-	1
Boys	1	3	1	1
Girls	4	3	2	1
Boys	3	1	4	5
Girls	3	-	3	2
Boys	1	2	2	1
Girls	2	1	1	2
Boys	-	-	1	-
Girls	-	-	-	1
Boys	6	3	6	6
Girls	9	4	5	4
Boys	-	-	-	-
Girls	-	-	-	-

T  
A  
L



CONSTANCY IN CONSISTENCY PREFERENCE OF PRESCHOOL CHILDREN

	Cauliflower kootu		Greens kootu		Sneakercard kootu		number of Masial times.
	Thick	Semi-thick	Masial	Thick	Semi-thick	Masial	
Boys	-	-	-	-	-	-	1
Girls	-	-	-	-	-	-	-
Boys	1	1	-	-	+	+	2
Girls	1	1	3	-	1	1	1
Boys	3	2	3	3	1	5	3
Girls	2	3	3	2	3	4	3
Boys	2	-	3	2	1	-	4
Girls	1	-	1	1	-	3	3
Boys	-	-	-	-	-	2	-
Girls	1	1	-	1	-	-	1
Boys	6	3	6	5	2	8	5
Girls	5	5	7	4	3	8	8

CONSTANCY IN SHAPE PREFERENCE OF PRESCHOOL CHILDREN

		Carrot Salad		Beetroot salad		Cabbage salad		Number of Times.
		Trian- gular bits	Long Sticks	Grated	Trian- gular bits.	Long Sticks	Grated bits.	
Boys	-	-	-	-	-	-	1	-
Girls	-	1	1	-	-	2	-	-
Boys	3	2	-	-	1	2	1	1
Girls	1	4	1	1	1	-	2	-
Boys	4	1	4	4	3	-	3	3
Girls	5	1	1	3	4	1	4	2
Boys	-	-	-	2	-	3	-	2
Girls	2	-	-	4	-	1	3	1
Boys	-	1	-	-	-	-	1	-
Girls	-	-	-	-	-	-	2	2
TOTAL	7	4	4	6	4	5	6	4
TOTAL	8	6	3	8	5	4	11	5

**APPENDIX L**  
**STATISTICAL ANALYSIS**

PREFERENCES IN COLOUR BY 32 PRESCHOOL CHILDREN AT HOME

Preparation	Varieties	Boys	Girls	't' value
Ladiesfinger Porial	Natural colour	7	11	1.041
	Additive colour	7	6	0.6560
	Dark colour	1	0	2.626*

$\bar{x}_1$	$\bar{x}_2$	$\sigma_1^2$	$\sigma_2^2$	$t = \frac{ \bar{x}_1 - \bar{x}_2 }{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$	't'
.06667	0	.0622	0	$\frac{.06667 - 0}{\sqrt{\frac{.0622}{15} + \frac{0}{17}}}$	2.626*

\* significant at .05 level.

**PREFERENCES IN COLOUR BY 32 PRESCHOOL CHILDREN AS  
OBSERVED IN FIVE REPLICATES**

<b>Preparation</b>	<b>Varieties</b>	<b>Number of times</b>	<b>Mean Difference</b>	<b>Critical ratio 't'</b>
<b>Snakegourd Porial</b>	<b>NC - AC</b>	<b>51-33</b>	<b>18</b>	<b>2.491*</b>
	<b>AC - DC</b>	<b>33-27</b>	<b>6</b>	<b>0.9567</b>
	<b>NC - DC</b>	<b>51-27</b>	<b>24</b>	<b>3.374**</b>
<b>Ladies finger Porial</b>	<b>NC - AC</b>	<b>55-43</b>	<b>12</b>	<b>2.7836*</b>
	<b>AC - DC</b>	<b>43-30</b>	<b>13</b>	<b>1.799</b>
	<b>NC - DC</b>	<b>55-30</b>	<b>25</b>	<b>3.317**</b>
<b>Cauliflower Porial</b>	<b>NC - AC</b>	<b>50-39</b>	<b>11</b>	<b>1.473</b>
	<b>AC - DC</b>	<b>39-30</b>	<b>9</b>	<b>1.286</b>
	<b>NC - DC</b>	<b>50-30</b>	<b>20</b>	<b>2.445*</b>

**NC - Natural colour**  
**AC - Additive colour**  
**DC - Dark colour**

*Contd.....*

Preparations	$P_1$	$P_2$	$P$	$p$	$t = \frac{ P_1 - P_2 }{\sqrt{\frac{PQ}{n_1} + \frac{PQ}{n_2}}}$	Critical ratio 't'
Snake-gourd Porial	$\frac{51}{111}$	$\frac{33}{111}$	$\frac{42}{111}$	$\frac{69}{111}$	$\frac{51}{111} - \frac{33}{111}$ $\sqrt{\frac{42}{111} \times \frac{69}{111} \times \frac{2}{111}}$	2.491*
	$\frac{51}{111}$	$\frac{27}{111}$	$\frac{39}{111}$	$\frac{72}{111}$	$\frac{51}{111} - \frac{27}{111}$ $\sqrt{\frac{39}{111} \times \frac{72}{111} \times \frac{2}{111}}$	3.374**
Ladies finger Porial	$\frac{55}{128}$	$\frac{43}{128}$	$\frac{49}{128}$	$\frac{79}{128}$	$\frac{55}{128} - \frac{43}{128}$ $\sqrt{\frac{49}{128} \times \frac{79}{128} \times \frac{2}{128}}$	2.7836*
	$\frac{55}{128}$	$\frac{30}{128}$	$\frac{85}{256}$	$\frac{171}{256}$	$\frac{55}{128} - \frac{30}{128}$ $\sqrt{\frac{85}{256} \times \frac{171}{256} \times \frac{2}{128}}$	3.317*
Cauliflower Porial	$\frac{50}{119}$	$\frac{30}{119}$	$\frac{40}{119}$	$\frac{79}{119}$	$\frac{50}{119} - \frac{30}{119}$ $\sqrt{\frac{40}{119} \times \frac{79}{119} \times \frac{2}{119}}$	2.445*

\* Significant at .05 level.

\*\* Significant at .01 level.

PREFERENCES IN TASTE BY 32 PRESCHOOL CHILDREN AS  
OBSERVED IN FIVE REPLICATES

Preparations	Varieties	Number of times	Mean Dif- ference	Critical ratio 't'
<b>Beans</b>				
Porial	So - Sa	41 - 42	1	0.1367
	Sa - Pe	42 - 34	8	1.122
	So - Pe	41 - 34	7	0.9804
<b>Cabbage</b>				
Porial	So - Sa	43 - 58	15	2.969*
	Sa - Pe	58 - 23	35	4.741**
	So - Pe	43 - 23	20	2.880*
<b>Carrot</b>				
Salad	So - Sa	50 - 43	7	1.028
	Sa - Pe	43 - 38	5	0.6673
	So - Pe	50 - 38	12	1.688

So - Sour  
Sa - Salt  
Pe - Pepper

Contd.....

\* Significant at .05 level  
\*\* Significant at .01 level

Preparations	$P_1$	$P_2$	$P$	$q$	$\frac{ P_1 - P_2 }{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical ratio 't'
Cabbage	$\frac{58}{124}$	$\frac{43}{124}$	$\frac{101}{248}$	$\frac{147}{248}$	$\frac{58}{124} - \frac{43}{124}$	2.969*
Porial					$\sqrt{\frac{101}{248} \times \frac{147}{248} \times \frac{2}{124}}$	
	$\frac{43}{124}$	$\frac{23}{124}$	$\frac{66}{248}$	$\frac{182}{248}$	$\frac{43}{124} - \frac{23}{124}$	2.889*
					$\sqrt{\frac{66}{248} \times \frac{182}{248} \times \frac{2}{124}}$	
	$\frac{58}{124}$	$\frac{23}{124}$	$\frac{81}{248}$	$\frac{167}{248}$	$\frac{58}{124} - \frac{23}{124}$	4.741**
					$\sqrt{\frac{81}{248} \times \frac{167}{248} \times \frac{2}{124}}$	

\* Significant at .05 level.

\*\* Significant at .01 level.

L

**PREFERENCES IN CONSISTENCY BY 32 PRE-SCHOOL CHILDREN  
AS OBSERVED IN FIVE REPLICATES**

Preparations	Varieties	Number of times	Mean Difference	Critical ratio 't'
<b>Cauliflower</b>				
Kootu	T - ST	47 - 32	5	2.010*
	ST - M	32 - 48	16	2.161*
	T - M	47 - 48	11	0.1296
<b>Greens</b>				
Kootu	T - ST	42 - 33	9	1.220
	ST - M	33 - 62	29	3.681**
	T - M	42 - 62	20	2.490*
<b>Snakegourd</b>				
Kootu	T - ST	39 - 32	7	.9865
	ST - M	32 - 51	19	2.396*
	T - M	39 - 51	12	1.486

T - Thick  
ST - Semi thick  
M - Masial

Contd....

Preparation	$P_1$	$P_2$	$P$	$q$	$t = \frac{(P_1 - P_2)}{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical Ratio 't'
Cauliflower	$\frac{47}{127}$	$\frac{32}{127}$	$\frac{79}{254}$	$\frac{175}{254}$	$\frac{\frac{47}{127} - \frac{32}{127}}{\sqrt{\frac{79}{254} \times \frac{175}{254} \times \frac{2}{127}}}$	2.010*
wer Kootu	$\frac{48}{127}$	$\frac{32}{127}$	$\frac{40}{127}$	$\frac{87}{127}$	$\frac{\frac{48}{127} - \frac{32}{127}}{\sqrt{\frac{40}{127} \times \frac{87}{127} \times \frac{2}{127}}}$	2.161*
Greens Kootu	$\frac{62}{137}$	$\frac{33}{137}$	$\frac{95}{274}$	$\frac{179}{274}$	$\frac{\frac{62}{137} - \frac{33}{137}}{\sqrt{\frac{95}{274} \times \frac{179}{274} \times \frac{2}{137}}}$	3.681**
Kootu	$\frac{62}{137}$	$\frac{42}{137}$	$\frac{52}{137}$	$\frac{85}{137}$	$\frac{\frac{62}{137} - \frac{42}{137}}{\sqrt{\frac{52}{137} \times \frac{85}{137} \times \frac{2}{137}}}$	2.490*
snake gourd Kootu	$\frac{51}{122}$	$\frac{32}{122}$	$\frac{83}{243}$	$\frac{161}{243}$	$\frac{\frac{51}{122} - \frac{32}{122}}{\sqrt{\frac{83}{243} \times \frac{161}{243} \times \frac{2}{122}}}$	2.396*

\* Significant at .05 level.

\*\* Significant at .01 level.

**PREFERENCES IN SHAPE BY 32 PRESCHOOL CHILDREN AS  
OBSERVED IN FIVE REPLICATES**

Preparations	Varieties	Number of times	Mean Difference	Critical ratio 't'
<b>Carrot</b>				
Salad	Gr - Tr	54 - 30	24	6.206**
	Tr - Ls	30 - 26	4	0.6191
	Gr - Ls	54 - 26	28	3.924**
<b>Beetroot</b>				
Salad	Gr - Tr	62 - 31	31	4.002**
	Tr - Ls	31 - 38	7	0.9817
	Gr - Ls	62 - 38	24	3.052**
<b>Cabbage</b>				
Salad	Gr - Tr	60 - 32	28	3.785**
	Tr - Ls	32 - 30	2	0.2942
	Gr - Ls	60 - 30	30	3.940**

Gr - Grated  
 Tr - Triangular Bits  
 Ls - Long sticks

Contd....

Preparation	$P_1$	$P_2$	$P$	$q$	$\frac{ P_1 - P_2 }{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical ratio 't'
Carrot	$\frac{54}{110}$	$\frac{30}{110}$	$\frac{84}{220}$	$\frac{136}{220}$	$\frac{\frac{54}{110} - \frac{30}{110}}{\sqrt{\frac{84}{220} \times \frac{136}{220} \times \frac{2}{110}}}$	6.206**
Salad	$\frac{54}{110}$	$\frac{26}{110}$	$\frac{80}{220}$	$\frac{140}{220}$	$\frac{\frac{54}{110} - \frac{26}{110}}{\sqrt{\frac{80}{220} \times \frac{140}{220} \times \frac{2}{110}}}$	3.924**
Beetroot	$\frac{62}{131}$	$\frac{31}{131}$	$\frac{93}{262}$	$\frac{169}{262}$	$\frac{\frac{62}{131} - \frac{31}{131}}{\sqrt{\frac{93}{262} \times \frac{169}{262} \times \frac{2}{131}}}$	4.002**
Salad	$\frac{62}{131}$	$\frac{38}{131}$	$\frac{100}{262}$	$\frac{162}{262}$	$\frac{\frac{62}{131} - \frac{38}{131}}{\sqrt{\frac{100}{262} \times \frac{162}{262} \times \frac{2}{131}}}$	3.052**
Cabbage salad	$\frac{60}{122}$	$\frac{32}{122}$	$\frac{46}{122}$	$\frac{76}{122}$	$\frac{\frac{60}{122} - \frac{32}{122}}{\sqrt{\frac{46}{122} \times \frac{76}{122} \times \frac{2}{61}}}$	3.785**

\*\* significant at .01 level.



STATISTICAL ANALYSIS BETWEEN VARIETIES FOR GIRLS

VEGETABLE PREPARATIONS

Variables	Varieties	Snake-gourd Porial	Ladies finger Porial	Cauliflower Porial	t' value
COLOUR	NC - AC	31 - 17	26 - 21	29 - 21	1.435
	AC - DC	17 - 14	21 - 17	21 - 16	0.9692
	NC - DC	31 - 14	26 - 17	29 - 16	2.338
Beans Porial					
TASTE	So - Sa	29 - 18	22 - 27	0.9139	Carrot Salad
	Sa - Pe	18 - 19	27 - 14	2.472	29 - 17
	So - Pe	29 - 19	22 - 14	1.578	17 - 26
Cauliflower Kootu					
CONSIS- TENCY	T - ST	23 - 21	22 - 17	0.9354	22 - 12
	ST - M	21 - 23	17 - 34	2.951	12 - 31
	T - M	23 - 23	22 - 34	2.043	22 - 31
Carrot salad					
SHAPE	GR - TR	30 - 18	35 - 17	2.646	39 - 21
	TR - Ls	18 - 10	17 - 16	.2000	21 - 10
	GR - Ls	30 - 10	35 - 16	3.365	39 - 10

NC - Natural Colour  
 AC - Additive Colour  
 DC - Dark Colour  
 So - Sour  
 Sa - Salt  
 Pe - Pepper

T - Thick  
 ST - Semi thick  
 M - Masial  
 GR - Grated  
 TR - Triangular Bits  
 Ls - Long Sticks

**PREFERENCES IN COLOUR BETWEEN BOYS AND GIRLS  
AS OBSERVED IN FIVE  
REPLICATES**

Preparation	Variety	Boys	Girls	Mean Difference	Critical ratio 't'
Snake gourd Porial	Natural colour	20	31	11	2.178*

$P_1$	$P_2$	$P$	$q$	$t = \frac{ P_1 - P_2 }{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical ratio 't'
$\frac{31}{51}$	$\frac{20}{51}$	$\frac{51}{102}$	$\frac{51}{102}$	$\frac{\frac{31}{51} - \frac{20}{51}}{\sqrt{\frac{51}{102} \times \frac{51}{102} \times \frac{2}{51}}}$	2.178*

\* Significant at .05 level.

**PREFERENCES IN TASTE BETWEEN BOYS AND GIRLS  
AS OBSERVED IN FIVE  
REPLICATES**

Preparation	Variety	Boys	Girls	Mean Difference	Critical ratio 't'
1. Beans Perial	Sour	12	29	17	3.754**
2. Carrot sa salad	Pepper	12	26	14	3.204**

$P_1$	$P_2$	$P$	$q$	$t = \frac{ P_1 - P_2 }{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical ratio 't'
-------	-------	-----	-----	--	--------------------------

1)	$\frac{29}{41}$	$\frac{12}{41}$	$\frac{41}{82}$	$\frac{41}{82}$	$\frac{29}{41} - \frac{12}{41}$	3.754**
					$\sqrt{\frac{41}{82} \times \frac{41}{82} \times \frac{2}{82}}$	

2)	$\frac{12}{38}$	$\frac{26}{38}$	$\frac{38}{76}$	$\frac{38}{76}$	$\frac{12}{38} - \frac{26}{38}$	3.204**
					$\sqrt{\frac{38}{76} \times \frac{38}{76} \times \frac{2}{38}}$	

\*\* significant at .01 level.

PREFERENCES IN CONSISTENCY BETWEEN BOYS AND GIRLS AS  
OBSERVED IN FIVE REPLICATES

Preparation	Variety	Boys	Girls	Mean Difference	Critical ratio 't'
Cauliflower Kootu	Semi- thick	11	21	10	2.500*
Snakegourd kootu	Semi- thick	20	12	8	2.000*
	Masial	20	31	11	2.178*

$P_1$	$P_2$	$P$	$q$	$t = \frac{(P_1 - P_2)}{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical ratio 't'
$\frac{21}{32}$	$\frac{11}{32}$	$\frac{16}{32}$	$\frac{16}{32}$	$\frac{\frac{21}{32} - \frac{11}{32}}{\sqrt{\frac{16}{32} \times \frac{16}{32} \times \frac{2}{32}}}$	2.500*
$\frac{20}{32}$	$\frac{12}{32}$	$\frac{16}{32}$	$\frac{16}{32}$	$\frac{\frac{20}{32} - \frac{12}{32}}{\sqrt{\frac{16}{32} \times \frac{16}{32} \times \frac{2}{32}}}$	2.000*
$\frac{31}{51}$	$\frac{20}{51}$	$\frac{51}{102}$	$\frac{51}{102}$	$\frac{\frac{31}{51} - \frac{20}{51}}{\sqrt{\frac{51}{102} \times \frac{51}{102} \times \frac{2}{51}}}$	2.178*

\* - Significant at .05 level.

**PREFERENCES IN SHAPE BETWEEN BOYS AND GIRLS AS  
OBSERVED IN FIVE REPLICATES**

Preparation	Variety	Boys	Girls	Mean Difference	Critical ratio 't'
Cabbage salad	Triangu- lar bits	11	21	10	2.500*
	Long sticks	20	10	10	2.582*

$P_1$	$P_2$	$P$	$q$	$t = \frac{(P_1 - P_2)}{\sqrt{\frac{Pq}{n_1} + \frac{Pq}{n_2}}}$	Critical ratio 't'
$\frac{21}{32}$	$\frac{11}{32}$	$\frac{16}{32}$	$\frac{16}{32}$	$\frac{21}{32} - \frac{11}{32}$	2.500*
				$\sqrt{\frac{16}{32} \times \frac{16}{32} \times \frac{2}{32}}$	
$\frac{20}{30}$	$\frac{10}{30}$	$\frac{15}{30}$	$\frac{15}{30}$	$\frac{20}{30} - \frac{10}{30}$	2.582*
				$\sqrt{\frac{15}{30} \times \frac{15}{30} \times \frac{2}{30}}$	

\* - significant at .05 level.

**SIMILARITIES OF PREFERENCES IN COLOUR BY  
32 PRESCHOOL CHILDREN BETWEEN HOME  
AND SCHOOL**

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Preparation	Variety	Boys	Girls	't' value
Snakegourd	Dark			
Perial	colour	0	1	3.316**

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$\bar{x}_1$	$\bar{x}_2$	$\frac{1}{n_1}$	$\frac{1}{n_2}$	$n_1$	$n_2$	$t = \frac{ \bar{x}_1 - \bar{x}_2 }{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$	't' value
.0909	0	.0083	0	11	10	$\frac{.0909 - 0}{\sqrt{\frac{.0083}{11} + \frac{0}{10}}}$	3.316**

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\*\* Significant at .01 level.

**SIMILARITIES OF PREFERENCES IN SHAPES  
BY 32 PRE-SCHOOL CHILDREN BETWEEN  
HOME AND SCHOOL**

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Preparation	Variety	Boys	Girls	't' value
Cabbage salad	Grated	2	-	2*
	Long sticks	2	-	2*

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$\bar{x}_1$	$\bar{x}_2$	$\sigma_1^2$	$\sigma_2^2$	$n_1$	$n_2$	$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$	't' value
.5	0	.25	0	4	0	$\frac{.5 - 0}{\sqrt{\frac{.25}{4} + \frac{0}{0}}}$	2*
.5	0	.25	0	4	0	$\frac{.5 - 0}{\sqrt{\frac{.25}{4} + \frac{0}{0}}}$	2*

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\* Significant at .05 level.

**SIMILARITIES OF PREFERENCES IN COLOUR TASTE,  
CONSISTENCY AND SHAPES BETWEEN HOME AND  
SCHOOL.**

Colour	Taste	Consistency	Shape	't'
65	47			2.682*
65		56		1.351
65			31	5.247**
	47	56		1.307
	47		31	2.386*
		56	31	6.658**

\* significant at .05 level.

\*\* significant at .01 level.

