

## **GENDER DIFFERENCES IN PROTEIN-INTAKE AND GEFT SCORES OF MIDDLE SOCIOECONOMIC STATUS IN HYDERABAD CITY\***

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*The Group Embedded Figures Test (GEFT) and Nutritional Assessment Dietary Questionnaire (NADQ) were administered on two groups of male and female subjects (N= 60) namely, Group-I (Meat plus vegetables), and Group-II (Vegetables only). Protein-intake was calculated from the total food consumed by the subjects and calories were estimated from the total grams of protein contents in food. The results indicated that the mean GEFT scores of the males of the Group-I were significantly greater than the mean scores of the females. The mean scores of the males of the Vegetable Group (i.e., Group-II) were not found to be significantly greater than the female scores on the GEFT. The results are discussed in terms of cultural traditions of nutritional priority to males.*

Witkin et al. (1954) defined psychological differentiation as the ability of individuals to perceive objects as separate from their field of reference. They proposed that the relatively field independent individual more readily disembeds objects from the field, while the relatively field dependent individual tends to view objects fused with the field. In other words, with increasing differentiation, there is implied an increasing degree of specialization or separation of psychological functions from one another (for example, feelings from perceptions). According to Witkin (1967) cognitive style refers to mode of functioning that characterize an individual's perceptual and intellectual activities. He differentiated between global and articulated (i.e., differentiated) cognitive style. A person with an articulated style is

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one who is skilled at differentiating and organizing features of the environment. A global style is the opposite.

Since the introduction of the concept, cross-cultural researches on cognitive styles have been continuing by means of various tests of field dependence-independence. Because of its social, political, and biological implications, the issue of gender differences in psychological differentiation have received particular attention in the literature. In their review article, Witkin and Berry (1975) hold that the evidence from the Western studies consistently indicates gender differences, with females tending to be more field dependent than the males are in their cognitive styles. Hyde and Rosenberg (1980) viewed that Witkins and his coworkers' conclusions were based on rod-and-frame test which the Western studies mostly used. The authors observed that the gender differences relating to spatial ability may be true, but the assertion that men are analytical, whereas women are global in their perceptions are wrong.

African and Eskimo researches, however, yields inconsistent results (Berry, 1966; Okonji, 1969). In Pakistan, several authors (e.g., Alvi, Khan, Vegeris, & Ansari, 1986; Imam, 1975; Khan, 1987) working with GEFT, CEFT, and Rod-and-frame test respectively, found no gender differences in psychological differentiation. Thus, Pakistani results are not consistent with the results obtained in the West. Inconsistent gender differences are most often explained in terms of differential socialization and eco-cultural factors (Berry, 1966; Khan, 1987; Witkin & Berry, 1975).

The influence of diet and ecology on human body and character was originally proposed by the great Muslim social scientist Ibn Khaldun (1332-1406), who has written the famous *Muquaddimal* "Introduction" in 1377 translated from the Arabic by Rosenthal (1958). Describing the inhabitants of Hijaz and the Yemen, who lived the desert of Maghrib, and whose nourishment was milk and meat. Ibn Khaldun observed:

In spite of this, the desert people who lack grain and seasonings are found to be healthier in body and better in character than the hill people who have plenty of everything. Their complexions are clearer, their bodies cleaner, their figures are perfect and better, their characters less intemperate, and their minds are keener as far as knowledge and perception is concerned. (p. 178).

In contrast to the desert people (Hijazi & Yemeni), the Berbers (inhabitants of fertile zones) who have plenty of seasonings and wheat, were described by Ibn Khaldun as "stupid in mind and coarse in body." Various cross-cultural psychologists (Berry, 1966, 1976; Dawson, 1967, 1969) have empirically demonstrated that protein-intake levels are likely to vary across the ecological dimensions. For example, hunters and gatherers (if successful) maintain high protein-intake levels affecting their cognitive styles in the direction of field independence. Berry's (1966) Temne-Eskimo results show that the Eskimo (high protein-intake) to have significantly higher spatial-perceptual ability and field independence than Temne (rice-accumulators with a low protein diet).

New laboratory analytical techniques and the advancements in biochemistry have resulted in wide interest in nutritional research. Nutrition is the sum total of all the processes that occur in body to break-down foods (containing carbohydrates, proteins, fats, minerals, and vitamins, etc.) into their various simple components (amino acids, simple sugars, ionized metals and nonmetals, fatty acids, and vitamins, etc.). The body then uses these substances for growth, repair and maintenance of all the systems that contribute to health. Thus, adequate food-intake leads to nutritional adequacy, whereas, inadequate food-intake has an adverse effect on health.

Table 1

*Quality of protein by chemical composition (amino acids content g/100 of nitrogen)*

Protein	Lysine	Methionine	Phenylalanine	Tryptophane	Chemical Source	Limiting A/A
Eggs	40	20	36	10	100	-
Corn (Plant Source)	18	12	28	4	40	Tryptophane
Soya (Plant Source)	40	8	31	9	40	Methionine

Proteins play a very important role in the nutrition of human beings. Proteins are obtained from two different sources namely, (a) animal; and (b) vegetable or plant. Animal source is again divided into proteins obtained from: (i) animals like buffalo, cow, goat, sheep, etc.;

(ii) birds; (iii) fish; and (iv) eggs, milk, etc. The vegetable sources are further divided into: (i) fat + protein, (ii) protein + carbohydrate, mainly proteins; and mainly carbohydrates (Table 1). "Mainly proteins" and "Mainly carbohydrates" refer to the main constituents or nutrients of the food source relating to proteins and carbohydrates, respectively. For example, Tuna has proteins of 24/100 grams, whereas carbohydrates could not be found in it. In rice, the main constituents is carbohydrates, but small amount of protein is found in this source of food.

It should be noted that all the Pakistani studies cited earlier show no gender differences in psychological differentiation. On the basis of several studies, Hyde and Rosenberg (1980) argued that when differences in spatial ability are removed, no significant gender differences were found on the rod-and-frame test. Thus, they concluded that males are not better than females in psychological differentiation. The prominent cross-cultural psychologists (Berry, 1966; Dawson, 1967, 1969) who have been cited earlier, agree that protein-intake due to its availability in the environment favours field independent cognitive style (psychological differentiation). In line with cross-cultural findings, it seems interesting to put a question that in a culture where nutritional priority (protein intake) is given to males, will there be gender differences in psychological differentiation? The present paper assumes that the greater protein intake of the males than the females, by virtue of cultural traditions, will make the GEFT scores of the adult males greater than the GEFT scores of the adult females.

## METHOD

### Subjects

Sixty working men and women of Meat and Vegetable Group (Group-I) and Vegetables only (Group-II) were selected from Shah Latifabad Town, Hyderabad. They were evenly divided by sex. The mean age of the male and female respondents was 34.3 and 34.1 years, respectively.

### Instruments

#### (i) *Group Embedded Figures Test (GEFT)*

The materials employed in this study include the GEFT developed by Witkin, Oltman, Rastin, and Karp (1971); introductory demonstration materials; a stop-watch; and sharpened soft black pencil.

The GEFT contains three sections: the first section, which contains 7 very simple items and is primarily for practice, and the second and third sections, each of which contains 9 more difficult items. Though the GEFT booklet contained all the necessary instructions in English, but since subjects of the present study were Urdu-speaking, therefore, the instructions were translated into Urdu language through back-translation technique.

The study began with an introductory phase during which the student volunteers explained in simple terms the basic techniques employed in performance on the GEFT. The solutions to the first 3 simple figures were demonstrated by the volunteers. In this phase every effort was made to ensure that the subjects understood the nature of the test. This phase was followed by the test administration. Here, the subjects were individually read out the Urdu version of the GEFT instructions.

(ii) *Nutritional Assessment Dietary Questionnaire (NADQ)*

The questionnaire for nutritional assessment of the food intake by the subjects of the Meat and Vegetable (Group-I) and Vegetables only (Group-II) was developed consistent with Pakistani food ingredients by the authors with the help of book on Nutrition and Biochemistry (for example, Howe, 1981).

## **Procedure**

The student volunteers first administered the GEFT, and then NADQ was administered on male and female subjects of both the groups. They also noted the protein intake of the respondents indirectly through probing questions (for example, the subjects were asked regarding shopping of food-stuff per week). Later on, the contradictions were resolved and actual position of the protein-intake by each subject was determined by the authors. The food intake during the meal-times and in the intervals was calculated in terms of calories. The calculation of calories was done separately for each essential nutrient (i.e., carbohydrate, protein, and fat).

## **RESULTS AND DISCUSSION**

The results as shown in Table 2 indicate that the male respondents of Group-I (i.e., Meat and Vegetable group) have significantly greater mean scores ( $t(58) = 2.0, p < .05$ ) than the mean scores on GEFT of the

female subjects of Group-I. It may also be seen in Table 2 that although the mean scores of the female subjects of the Group-II are greater ( $t(58) = 1.75, p = ns$ ) as compared to the mean scores of the female subjects of the same group, but not significant (Table 2). In terms of mean GEFT scores ratio, it comes to approximately 1.5: 1.

Table 2

*Means, standard deviations and t-values on GEFT for males and females of Group-I and Group-II*

Groups	Males (n=30)		Females (n=30)		t	p
	M	SD	M	SD		
Group-I (Meat+ Vegetable)	14.2 (P=113;C=450)	3.27	6.9 (P=94; C=375)	3.03	2.00	.50
Group-I (Vegetable)	14.0 (P=113;C=450)	2.73	10.0 (P=94; C=379)	4.06	1.75	ns

df=58

Note: - Protein (P) in grams and calories (C) intake are shown in parenthesis.

- Normal protein (P) in grams and calories (C) intake for Meat+Vegetable group are 113 and 450, respectively; and for the Vegetable group it is 113 and 375, respectively.

It may be indicated that the mean scores on GEFT for male subjects of the both the groups (i.e., Meat and Vegetable as well as Vegetables only groups) show an approximate ratio of 1:1, whereas, the mean scores of the Group-I and Group-II in case of female subjects have a ratio of 1:1.4. It reveals that the females of the Vegetable group have significantly greater GEFT scores than the females of the Meat + Vegetable group. It also shows male-female differences in terms of both proteins and calories consumed by the subjects as assessed through NADQ (Table 2).

It can also be seen in Table 2 that the male-female ratio of calories and protein intake of the Group I (Meat + Vegetables) is 1.5:1 and 1.54:1 respectively, whereas male-female ratio for the Group II (Vegetables only) is 1.3:1 and 1.25:1, respectively. Thus, our results show that due to nutritional priority men do significantly better than the women on Group Embedded Figures Test. The findings are consistent with the assumption that protein-intake due to its availability in the

environment favours field independent cognitive style (Berry, 1966; Dawson, 1967). It may, therefore, be concluded that the greater the calories and protein-intake by the subject, the greater the scores on the GEFT.

Now, the question arises as to why working men and women belonging to the same socioeconomic status vary in calories and protein-intake. It may be observed that when meat/fish is cooked, lion share goes to male members of a family. It is interesting to note that even working women in the middle class of Pakistani society sometimes live upon soup and voluntarily offer protein rich diet to their husbands/sons. Awan (1986) has made her observation about better nutritional status of males rather than females in low-income groups of Pakistani society.

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