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## **VALUES AND VALUE PRIORITIES OF MEMBERS AND NON-MEMBERS OF A TRIM AND FIT CLUB IN A SECONDARY SCHOOL IN SINGAPORE**

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### **Introduction**

This study explores how values and value priorities may influence the motivation of overweight and obese individuals towards exercise and dietary patterns. This question is examined within the context of the education system in Singapore, focusing on the cohort of children aged 13 to 16 years, who are currently in a neighbourhood secondary school.

Since national independence in 1965 there has been a dramatic increase in affluence amongst Singaporeans. One positive consequence for the majority of the population has been the removal of concerns about providing children with enough to eat from day to day. Hence, the well-fed child is often perceived as outward symbol of prosperity. One negative consequence, however, has been a significant increase in the proportion of the population who overindulge in food. When coupled with low rates of exercise, there is an increase in the risk of individuals becoming overweight or obese. At this stage, obesity is a risk factor in a number of diseases, notably hypertension, diabetes, and coronary artery disease (Pollock and Wilmore, 1990).

In Singapore, the increasing number of overweight people has prompted a call from the government to adopt a more healthy lifestyle. In the school environment the Trim and Fit (TAF) Programme has been designed to reduce health problems amongst those children who are more than 120% of the recommended weight.

The most common explanations for overweight and obesity focus on the interactions between genetic and social factors, although there is also an association with endocrine and hypothalamic functions. Nevertheless, the apparent correlation between modernisation and prevalence of obesity suggests that socially learned behaviour is playing a considerable role in the incidence of sedentary health problems. Behaviour is motivated by the internalisation of beliefs and values, so it may be suggested that the problem of obesity amongst school children is strongly associated with the example set by significant others. It is therefore proposed that beliefs and values may be important antecedents of social behaviour leading to overweight and obesity.

### **REVIEW OF LITERATURE**

#### **Overweight and Obesity**

Obesity is the condition of being significantly and unhealthily overweight (Berger, 1995). A male is generally considered obese if 20% or more of his body composition is fat. A female is considered obese if she has a body fat percentage of 25% or more (McArdle, 1986; in Kotecki, 1997). Obesity is a physical and medical problem at any stage of life, for the obese person runs a greater risk of serious illness. Obesity is linked to a number of important degenerative diseases such as diabetes, heart disease, and hypertension (Pollock and Wilmore, 1990).

The causes of obesity are linked to heredity, activity level, attitudes towards food, types of food eaten, overfeeding in infancy and late childhood, television watching and physiological problems (Berger, 1995). Furthermore, being overweight, according to Berger (1995) is a psychological problem as well as a physical problem. Individuals, who know they are overweight, are more likely to experience diminished self-esteem, depression, and behaviour problems.

The precise point at which a child becomes overweight or obese varies, depending partly on the child's body type, partly on the proportion of fat to muscle, and partly on the culture's standards on the question of diet and exercise (Berger, 1995). In Singapore, for example, there may be less of a social

stigma attached to obesity amongst young children than there is in some western countries. There is anecdotal evidence to suggest that grandparents, who are often closely involved in the rearing of grandchildren, tend to encourage overeating.

In 1990, the First Deputy Prime Minister, Mr Goh Chok Tong, remarked that there was a disturbing trend towards obesity among schoolchildren in Singapore. He predicted that a continuing trend would result in one out of every five Secondary 4 boys in 1993 being obese (Straits Times, 16 March 1990). The same pattern appears to have developed with the younger age-groups for in 1991, Dr Tay Eng Soon, then the Senior Minister of State for Education, noted that nearly 18 percent of Primary Six boys suffer from obesity (Straits Times, 19 September 1991).

In 1993, the Ministry of Health reported that during the fifteen year period from 1976 to 1991, the percentage of children classified as obese in Singapore schools had risen from 2.2% to 15.1%. Male children were seen to be slightly more susceptible to being overweight than female children. In the last six years the percentage figures of children in the overweight category has declined by nearly 5 points to 10.2% (Ministry of Education, 1997), however a substantial problem remains. The escalation of these figures prompted state action with the initiation of the Healthy Lifestyle scheme in 1991 to reduce high risk lifestyle practices, and motivated the launch of the Trim and Fit Programme in 1992 to help overweight and obese students shed their fat. Weight control, physical activity, and healthy eating are seen as essential for the prevention and control of diseases such as diabetes (Ministry of Health, 1991). All the programmes have implicitly emphasised the role of the individual in promoting and maintaining his or her own health, within a supportive environment.

Learning to be fit and healthy, and by inference productive, implies that the process of socialisation must ensure the transmission of acceptable and appropriate standards of behaviour. Brustad (1992) has defined socialisation as the process whereby individuals learn skills, traits, values, attitudes, norms, and knowledge associated with the performance of present or anticipated social roles. Following this definition it appears that social and psychological influences which shape an individual's initial attraction to forms of exercise and diet, include the prevalent attitudes and values of the family and the peer group.

## Values

Based on the work of Rokeach (1973) and Kluckhohn (1951), Schwartz (1992) has defined values as desirable, transsituational goals, varying in importance, that serve as guiding principles in people's lives. Values represent three universal requirements of human existence: biological needs, requisites of co-ordinated social interaction, and demands of group survival and functioning (Schwartz, 1992). The crucial content aspect that distinguishes values is the type of motivational goal that is expressed. Ten motivationally distinct types of values belonging to four higher-order categories, can be derived from the universal requirements:

- Self-Enhancement:** power and achievement;
- Self-Transcendence:** universalism and benevolence;
- Openness to Change:** stimulation and self-direction;
- Conservation:** tradition, conformity, and security

NB hedonism is the tenth value type and considered to be a transitional type adjacent to both Self-Enhancement and Openness to Change.

As values are represented in terms of hierarchically integrated value systems (Schwartz, 1992) it is conceivable that a process of prioritisation is involved in the decision making processes of individuals. In the case of participants in this study it might be assumed that values are associated, in a predictable fashion, with membership or non-membership of the TAF Club. In other words values may be antecedents and/or consequences of a propensity to be overweight.

Behaviours are guided not by the priority given to a single value but by the dynamic relations or trade-offs among competing values that are implicated simultaneously in a behaviour or attitude. Consequently, the "full set of value priorities can be related to other variables in an organised, coherent manner rather than in a piecemeal fashion." (Schwartz, 1992)

## HYPOTHESIS DERIVATION

It is assumed that excessive food intake coupled with low activity levels combine to produce a state of being overweight

The hypotheses for this study are in two forms: general and specific. From a general perspective, participants and non-participants in the TAF Programme will differ significantly in the prioritisation of their values. Specifically, when considering the main value dimensions, pupils in the TAF Programme will place greater emphasis on Conservation value types such as Security and Conformity, than pupils in the non-TAF Programme. The corollary of the first hypothesis is that, pupils in the non-TAF Programme will place greater emphasis on Openness to Change value types such as Stimulation and Self-Direction.

For values types relating to Self-Enhancement, pupils in the non-TAF Programme will tend to score higher in values such as hedonism, achievement, and power, whereas pupils in the TAF Programme will score lower. For values relating to Self-Transcendence, pupils in the non-TAF Programme will tend to score lower in value types such as universalism and benevolence, whereas pupils in the TAF Programme will tend to score higher.

## RESEARCH PROCEDURE

### a) Data collection

A random sample of 130 secondary pupils from the express, normal and normal technical streams who are non-participants of the TAF Programme was taken. The total population of participants (about 130 pupils) in the TAF Programme was also surveyed. The samples were taken from a co-educational, government neighbourhood secondary school which has a total population of about 1759 students. The sample of participants in the TAF programme represents 7.3% of the total school population.

### b) Instrumentation

The Schwartz Value Survey, which contains 56 items, was administered. All subjects were requested to rate the importance of each value in the survey as a guiding principle in their lives. Scores between -1 (negative importance) to +7 (supreme importance) were anticipated. Individual weight for height measures provided by the school were used to classify students. Those above 120% of standard weight (Ministry of Health, 1993) were designated as members of the TAF Club. Those below 80% of standard weight were identified for sub-analyses.

### c) Data analysis

Students between the ages of 13 and 16 were selected from the samples for this study. The twelve year old students (n=30) and the seventeen (n=16), eighteen (n=7), and nineteen year old students (n=3) in the sample were excluded in order to create four balanced and relatively homogeneous groups that had experienced the regular social and educational background of secondary school system. It was assumed that this paring of the sample in conjunction with statistical controls would produce more reliable and valid results. The raw data was checked for anomalies, and, as a strategy to avoid the need for standardisation of scores, the mean score of each individuals responses to the 56 values was used as a covariate to minimise the effect of response bias.

Frequency tables were examined to ensure completeness of data entry. Cases with missing scores or extreme response bias were dropped from the analysis.

The interval of -1 to 7 was interpreted as representing an appropriate scale for parametric analysis. Assumptions concerning the normality of the data were tested by means of probability plots. The equality of variance of the two respective groups was ascertained by means of Box's M test.

Subjects were classified according to membership of the TAF club. However as a follow-up exercise the Body Mass Index (BMI) of each individual was computed as an external variable. This was done to

confirm the original classification of TAF Club membership. BMI was used here as a representative reflection of an individual's body composition. The index is determined as the ratio of height to weight<sup>2</sup> or  $BMI = \text{weight}/\text{height}^2$  (kg/m<sup>2</sup>). An underweight individual scores a value of 20 or less, a normal weight individual scores between 20.1 and 25.0, an overweight individual scores between 25.1 and 30.0, and an obese individual scores above 30.1 (Pollock and Wilmore, 1990). It was decided to undertake Multivariate Analysis of Covariance (MANCOVA) to test the hypotheses of differences between the groups of individuals. Gender, age, and the mean of the individuals scores were the covariates included in the design to adjust for potential differences reflected in the raw data.

### Reliability and Validity

The Schwartz Value Survey has previously been validated for use in the Singapore context (Schwartz, 1995). Subjects in that instance were school teachers. As one of the first studies of secondary children, this investigation used two tests. A smallest space analysis or SSA procedure was undertaken to validate the composition of each value type. The process of correlating individual values produces a multidimensional value configuration. The reliability of Schwartz Value Survey was also tested. Cronbach Alpha scores, based on average covariance among the items, were generated to test the internal consistency of the value configuration.

## RESULTS

### Value Configurations

The configuration (not illustrated here) did not provide a close match to the prototype derived by Schwartz (1992). Not all values appeared in their predicted locations or sectors adjacent to the prime location. However, as Schwartz (1992) himself reported, values may legitimately appear in other locations. Nevertheless, eight values were discarded for the purpose of the MANCOVA as their locations were either beyond the adjacent sector or they failed to appear in the secondary location identified by Schwartz.

### Classifying students

Table 1 shows the characteristics of the samples. Members of TAF form a more homogeneous grouping with the females marginally taller and heavier than their male counterparts. Scores for non-TAF members represented a more predictable profile with males on average 5% taller and 12% heavier than females.

Table 1 Characteristics of the Samples, including Group Means and SD for Height and Weight

	Group Size	Range of Height (m.)	Mean (SD)	Range of Weight (kg.)	Mean (SD)
Male TAF Club members	49	1.43-1.81	1.61 (±.09)	47-108	71.5 (±13.5)
Female TAF Club members	40	1.50-1.84	1.62 (±.08)	53-110	74.2 (±13.1)
Total	89				
Male non-members of TAF	47	1.53-1.81	1.67 (±.06)	40-75	54.0 (±7.6)
Female non-members of TAF	43	1.45-1.71	1.58 (±.06)	31-61	47.4 (±7.7)
Total	90				

The correlation between the BMI classification and the Weight for Height classification was .94, which was significant at the 0.01 level.

**Value priorities of TAF and Non-TAF Members**

The hierarchical nature of the value system which represents the combined sample of TAF and Non-TAF children is shown in Table 2. ‘Conformity’ is the main priority, whilst ‘Power’, ‘Stimulation’, and ‘Hedonism’ were revealed as the lowest priorities.

The Cronbach alpha scores for each value type, by group, are also presented in Table 2. Based on the scores provided by the subjects in this study, it can be determined that the extent to which the items in the survey were related to each other was questionable. The TAF group recorded Alpha scores averaging .50, whilst the non-TAF group recorded an average of .51. Tradition and Hedonism represented the most problematic areas for members and non-members of the TAF Club, with low indices reflecting difficulties in conceptualising the relationship between each of the values comprising the value type. The wide discrepancy between the alpha scores for Self-Direction supports this contention. Based on these scores one must approach the findings with caution.

Table 2: Descriptive Statistics for the Total and Cronbach Alphas by Group.

Rank Order	Value type	Mean	SD	Cronbach Alpha TAF (n=89)	Cronbach Alpha Non-TAF (n=90)
1	Conformity	<b>5.40</b>	.91	.72	.67
2	Universalism	<b>4.83</b>	.82	.45	.55
3	Benevolence	<b>4.79</b>	.97	.53	.56
4	Security	<b>4.70</b>	.96	.46	.42
5	Achievement	<b>4.63</b>	.96	.66	.64
6	Self-Direction	<b>4.43</b>	.93	.44	.63
7	Tradition	<b>4.34</b>	1.17	.39	.31
8	Power	<b>3.92</b>	1.55	.47	.46
9	Stimulation	<b>3.74</b>	1.29	.46	.50
10	Hedonism	<b>3.71</b>	1.28	.40	.35

Levene’s Test indicated that there was equality of error variance of the dependent variable across the two groups. Box’s M test indicated that the group covariance matrices of the dependent variables were equal across groups: **Box’s M = 64.343, F(55,101145) = 1.10, Significance = .283**

**Differences in Value priorities between Members and Non-members of TAF.**

To compare the two groups on each of the 10 dimensions a multivariate analysis of covariance (MANCOVA) was conducted (Table 3). The MANCOVA revealed a significant effect for group, **F(10,165)=2.10, p=.026**, with an observed power to reject the null hypothesis at the 0.05 level of .89. The magnitude of this effect was  $\eta^2 = .113$ , indicating a small amount of variance between dependent variables that could be explained by variation in the independent variable. It was therefore calculated that 11.3% of the variance in value types could be explained by membership of the respective groups. Univariate F tests (with 1,174 D.F.) indicated that the TAF group and the non-TAF group differed significantly on two of the ten dimensions of the model. The TAF group placed greater emphasis on ‘BENEVOLENCE’ (**F=7.53, p=.007**), and less emphasis on ‘STIMULATION’ (**F=12.11, p=.000**), than the non-TAF group.

Table 3: Univariate F-tests with (1,230) D.F. and Magnitude of Effect ( $\eta^2$ )

Value Type	Type III SS	Error SS	Type III MS	Error MS	F	Sign of F.	$\eta^2$
Power	.493	266.63	.493	1.532	.321	.571	.002
Achievement	.162	94.87	.162	.545	.297	.586	.002
Hedonism	4.630	212.36	4.630	1.220	3.794	.053	.021
Stimulation	12.540	180.24	12.540	1.036	12.106	.001	.065
Self-Direction	7.109E-02	88.19	7.109E-02	.507	.140	.708	.001
Universalism	2.279E-02	67.92	2.279E-02	.390	.058	.809	.000
Benevolence	3.610	83.42	3.610	.479	7.531	.007	.041
Tradition	3.664E-02	128.38	3.664E-02	.738	.050	.824	.000
Conformity	1.764	88.24	1.764	.507	3.479	.064	.020
Security	.522	72.74	.522	.418	1.248	.265	.007

Two value types, 'CONFORMITY', which is adjacent to 'BENEVOLENCE' in the model and 'HEDONISM', which is adjacent to STIMULATION, recorded scores to suggest that they would merit further enquiry.

The marginal means generated by the MANCOVA with mean score, age and gender as covariates (Table 4) revealed the importance of conformity, universalism and security to both sets of students. Benevolence was the only value type to be significantly more important to the TAF group members. And stimulation was the only value type to be significantly more important to the non-TAF group.

Table 4: Marginal Means and Standard Error Figures for Value Types by Group in Rank Order

Rank	Value type	TAF Students		Rank	Value type	Non-TAF Students	
		Marginal Means	Std. Error			Marginal Means	Std. Error
1	Conformity	<b>5.50</b>	.08	1	Conformity	<b>5.30</b>	.07
2	Benevolence	<b>4.94</b>	.07	2	Universalism	<b>4.82</b>	.07
3	Universalism	<b>4.84</b>	.07	3	Achievement	<b>4.66</b>	.07
4	Security	<b>4.76</b>	.07	4	Security	<b>4.65</b>	.06
5	Achievement	<b>4.60</b>	.08	5	Benevolence	<b>4.65</b>	.07
6	Self-Direction	<b>4.41</b>	.08	6	Self-Direction	<b>4.45</b>	.07
7	Tradition	<b>4.32</b>	.09	7	Tradition	<b>4.35</b>	.08
8	Power	<b>3.87</b>	.13	8	Stimulation	<b>4.00</b>	.09
9	Hedonism	<b>3.55</b>	.12	9	Power	<b>3.97</b>	.11
10	Stimulation	<b>3.47</b>	.11	10	Hedonism	<b>3.87</b>	.11

**Intra-Gender Differences**

When the groups were subdivided into gender categories and compared, it was discovered that, at the multivariate level, there was no difference between the values of male TAF and male non-TAF members, nor between the female TAF and female non-TAF members. The male comparison (n=96) revealed  $F(10,83)=1.737$ ,  $p=.086$ , and the female comparison (n=83), revealed  $F(10,70)=1.173$ ,  $p=.324$ . However at the univariate level, male TAF Club members placed more emphasis on BENEVOLENCE:  $F(1,92)=4.110$ ,  $p=.046$ , and on SECURITY:  $F(1,92)=4.646$ ,  $p=.034$ , than male non-members. Also male TAF members placed less emphasis on STIMULATION than male non-members:  $F(1,92)=5.335$ ,  $p=.023$ . The only similar difference with the female sample related to the

finding that TAF Club members placed less emphasis on STIMULATION than female non-members:  $F(1,79)=6.763, p=.011$ .

### Inter-Gender Differences

Male and female TAF Club members were closely linked on the basis of height and weight. In terms of a comparison of values however, there was a significant difference between the genders:  $F(10,76)=2.938, p=.004, \eta^2=.279$ . Females were more conservative than males, placing particular emphasis on TRADITION and CONFORMITY.

Amongst the non-TAF Club members a significant difference was also registered:  $F(10,77)=1.979, p=.047, \eta^2=.204$ . Whilst males were more open to change and placed greater emphasis on HEDONISM, females were again more conservative with higher scores for CONFORMITY and SECURITY.

### DISCUSSION

The initial classification of students revealed that females in the TAF Club were, on average, heavier than the males. Based on observations of the group it was concluded that the males tended to be more actively engaged in the PE lessons and TAF programme than the females in this school. This finding seems to indicate that particular attention must be paid to the girls within the TAF Club.

It was established that the value priorities of the respect groups were different. The main findings indicated that the TAF members do not to seek variety, risk and challenge in life (STIMULATION) as much non-members. This finding was clear-cut based on the scores and the well-defined structure of the value type within in the value configuration. This result does represent a fit with the original hypotheses. However, the expectation that adjacent value types would also show similar findings was only partially supported in the case of HEDONISM.

The results relating to BENEVOLENCE are more difficult to interpret as the smallest space analysis produced a configuration that contained only one value that is normally associated with this value type. It is suggested that individuals in this teenage category may have more difficulty in conceptualising values that concern group interests as compared to values that concern individual interests. This means that the individual's value system has probably not yet been fully established until late adolescence. Further studies should attempt to simplify the labelling and definitions of the values within the survey instrument. The adjacent value type CONFORMITY showed evidence of a similar positive relationship with membership of the TAF Club.

The children in this study are all involved in the on-going process of maturation. One might infer that just as elements of their physical development are changing and being modified by experience, so are their affective and cognitive abilities. Of the three universal requirements indicated by Schwartz (1992): individual biological needs, requisites of co-ordinated social interaction, and group welfare and survival needs, it would seem that children of this age range would be more sensitive to values focusing on the individual needs.

Values are assumed to be both antecedents and consequences of behaviour. Therefore it is difficult judge whether the present results are indicative of the causes of overweight and obesity or outcomes resulting from the interaction of over-eating and under-exercising. It is just as reasonable to conclude that the low prioritisation of stimulation values reduces the inclination to exercise, as it is to assume that overweight and poor fitness due to lack of exercise, results in low desire to participate in activities perceived to be risky, physically taxing or dangerous. What is clear from the findings is that there is increasing support for explanations of obesity based on psycho-social elements of behaviour.

Where do the underweight in schools fit in to the scheme? Students who recorded a weight for height index of 80%, or less, of the standard weight criterion, might also qualify for membership of the TAF Club. In reality these individuals are assumed to be less at risk, and as such are not usually obliged to engage in TAF Club activities. It is nevertheless plausible that the scores for the values of individuals in this category may have had some influence on the results. One might question whether their values are closer in orientation to the non-TAF members or to the TAF members. Unfortunately the number

of underweight (n=12) was too small to generate a meaningful analysis. It is therefore suggested that further avenues of research be designed to focus on the health risks that might be present amongst the very light students.

## CONCLUSIONS

The implications of the findings focus on three main areas. First, activities within the TAF Club must be made as stimulating for the members as possible. Games and competitions are suggested as viable alternatives to repetitive conditioning exercises. Males and females may well require different types of programme to enable the full benefit of exercise programmes to be experienced. In some schools it is common practice to integrate males and females for TAF activities. This may be disadvantageous for the girls. It is hypothesised that the females in the TAF Club feel more self-conscious and therefore less comfortable with periods of action and movement than the boys. Second, the values of underweight children require investigation. It is possible that the discovery of differences in priority of values amongst this category might highlight significant behavioural patterns. Additional questions that need to be addressed concern the possible correlations between values of the underweight, normal-weight, and overweight. For example, as underweight individuals are perceived to be less at risk than overweight individuals, are their value systems more closely related to the normal-weight category of students. And third, the allocation of children to the TAF Club must be carefully regulated. It is apparent from the data collection procedure in this experiment that inaccurate entry of height and or weight figures may result in the incorrect allocation of students to the programme. The need for accurate measurement of height and weight by PE and class teachers involved in the health programme of the school therefore necessitates adequate training in order to complete a reliable and valid test.

As this is an exploratory study, the implications that can be drawn can only be used as reference for future studies. The implications should be of interest to educationists who plan programmes for school children or for parents of young Singaporeans in general. Within the National Education curriculum, more personal values could be imparted to children bearing in mind that we are dealing with children who may or may not know the values they are dealing with. Placing emphasis on variety, daring and excitement is fully in line with earlier calls to create a rugged society.

It seems necessary to place the problem of overweight and obesity within a broader context that integrates socialisation and children's motivation. Parents must not neglect the need for stimulation in their children. If the values used in this study have identified a causal link between behavioural patterns and obesity, then there is considerable justification to recommend greater daily emphasis on physical activity.

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