Influences On Maltese Children's Food Intake: Proposing a 'Socio-Ecological Culture-Cuisine Food Model'

S. Piscopo

Faculty of Education, University of Malta

Introduction

"It is sometimes wrongly assumed that just by providing people with information they will automatically be able to make healthy choices. While more knowledge, information and health education is important, the evidence shows that decisions to adopt health-enhancing behaviour- for example eating healthily…are often constrained by the broader physical, social, economic and cultural environments which influence the choices that individuals, groups and local communities make." (WHO, 1999).

The complexity of influences on children's food choices is undisputed. It is an area which has often been researched through analysis of different factors ranging, for example, from gender to family socio-economic status, from individual food preferences to peer modelling, and from maternal prescriptions to school food and nutrition education. However, models which offer an integrated systematic representation of how these different factors work in determining a child's food intake are scarce.

Spurred by this lacuna and in acknowledgement of the WHO (1999) Health21 statement, research was conducted with Maltese 7-8-year-olds and their parents in order to identify and explore factors which influence the children's food intake. Based on the most salient themes emerging from the results, a 'Socio-Ecological Culture-Cuisine Food Model' is being proposed in order to facilitate understanding of this phenomenon.

Developing The Model

In developing the model, reference was made primarily to the eco-systems theory as conceived by Bronfenbrenner (1989a; 1989b) and to different sociological theories of consumption as proposed by Bourdieu (1977; 1984; 1998), Mennell (1992), Murcott (1982) and Warde (1997). Consideration was also given to Social Cognitive Theory (Bandura, 1986; Reynolds et al., 1999), particularly because of the clear role of preferences, health value cognition and modelling in children's food intake.

The model's development was also influenced by Bronfenbrenner's (1989a) ecological model of environmental influences on behaviour, McLeroy et al's (1988) socio-ecological model for nutrition education evaluation and Story, Neumark-Sztainer and French's (2002) composite theoretical framework for understanding adolescent eating behaviour. Elements of Satia-Abouta et al's (2002) proposed model of dietary acculturation were also included, due to the culture-cuisine interest of the research.

Yet the specific components of the proposed 'Socio-Ecological Culture-Cuisine Food Model' are grounded in the results obtained from the different stages of the research as outlined in Table 1. Quantitative and qualitative methods were used with a sample of Maltese primary schoolchildren and their parents. Children were selected from different regions around the Maltese Islands and from different types of schools (fee-paying/non-fee-paying; large, small; single gender, mixed gender). An initial survey served to establish a database of the typical foods and drinks consumed by children in different settings. This database was then used to develop the research tool for a second large-scale survey which identified which were the most commonly consumed and preferred foods and drinks in different settings. Eventually, focus group interviews were held with a representative sample of children in order obtain

more in-depth information on children's perceptions and behaviours in relation to specific foods, such as fruits, vegetables, snacks and with regard to school food rules and TV-portrayal of food. Finally, telephone interviews were held with parents, primarily mothers, in order explore criteria used by parents in selecting foods for their children, attitudes towards and recommendations regarding school food rules and their experiences of the influence of TV food portrayal on their children.

Table 1: The Different Stages Of The Research Which Provided The Data For Developing The Model

QUANTITATIVE DATA	QUALITATIVE DATA
■ Children's survey (7-8-year-olds; N=163) AND ■ Children's survey (7-8-year-olds) (N=1088) AND ■ Parents' survey (N= 952) **Goal:** Identification of children's eating habits and food preferences	■ Children's focus groups (7-8-year-olds; N=16 groups X 6 children) **Goal:** Influences on food consumption ■ Parents' interviews (N=30) **Goal:** Influences on food provision for children

Describing The Model

Given the multitude of variables which emerged as salient from the different stages of the research, a socio-ecological type model was deemed an appropriate framework for explaining the various influencing factors on the children's food choices and behaviours (Fig. 1). This allowed for the pictorial presentation of systems interactions where factors within the various sub-systems in each ecological level influence a child's food perceptions, requests and intake by interacting with each other and interacting across ecological levels. The model considers four different levels of the child's environment and their relationship with the child's food intake: the Intrapersonal, Interpersonal, Community and Macro levels. However, the model also incorporates the label 'Culture-Cuisine', as consideration has been given to the different factors which may influence the acculturation process in food preferences and behaviours.

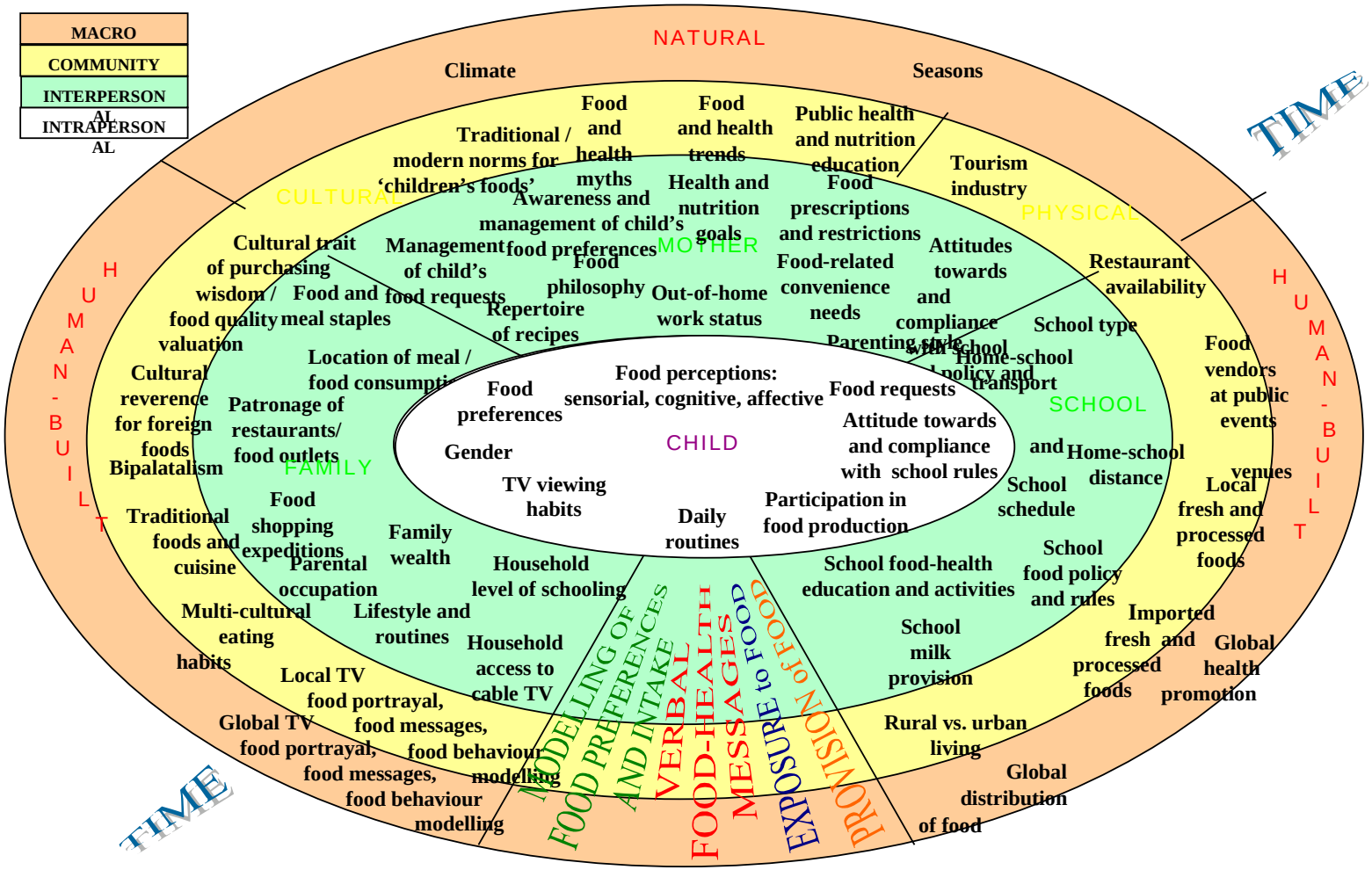

Figure 1: **A 'Socio-Ecological Culture-Cuisine Food Model' of influences on children's food intake**

At the Intrapersonal level, the child is at the centre of the model, where his or her various mental, emotional, behavioural or biological processes and/or characteristics directly influence food intake. Food perceptions are major players in generating preferences and/or requests and in determining intake. Perceptions can be sensorial, cognitive or affective. Flavour, texture and appearance are sensory-related attributes of foods which influence a food's appeal to children's senses. Health value (nutritional property and food safety), food quality and convenience properties are cognitive perceptions which influence a child's liking or valuation of a food. Enjoyment value of food, the treat value of food, association with pleasurable occasions, or value as a tool for communication with peers are positive affective perceptions which may motivate a child to make particular food choices.

At the Interpersonal level, the key players are the mother, members of the immediate and extended family and members of the school system. The model delineates these three different sub-systems at this level and the multitude of factors within each one which have a role in the child's food intake directly or indirectly. These factors may interact within the sub-system, or with the other sub-systems, or across levels to the inner or outer systems. For example, the mother's hedonic motivation in providing food for her children (as part of her food philosophy) may influence the extent of her food prescriptions and restrictions, as well as her general food-related parenting style (Fig. 2). This in turn will influence her provision of opportunities for the child to participate in food production activities and ultimately the child's self-provided food intake.

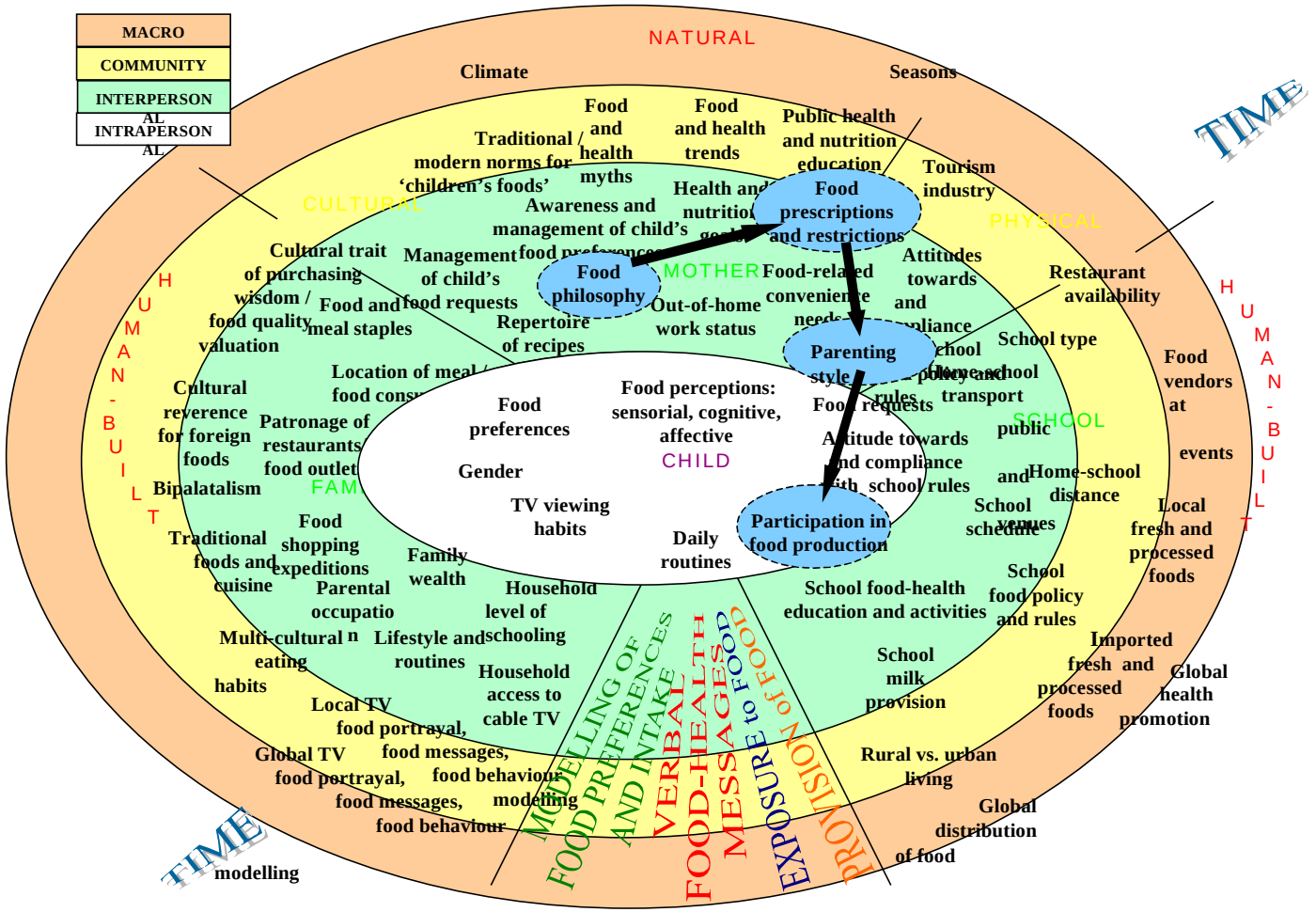

Figure 2: Use of the model to show interaction of different factors at the Interpersonal Level and across levels

At the Community level, two major sub-systems emerge: Physical and cultural food availability. Within the physical system, extent and variety of local and imported fresh and processed foods available on the market influence orientation of the nation's overall diet. Certain foods are more accessible to children as a result of events and venues they typically experience, as well as due to their region of residence. Increasing presence of international fast food chains and take-away outlets offers convenience in food provision and accessibility.

The cultural system is made up of factors related to cuisines, food norms, diet-related acculturation and consumption traits. It comprises community level trends, such as multi-cultural eating habits which embrace traditional foods and cuisine to different degrees and in different settings. The cultural system also comprises factors which could influence norms for children's food, such as local TV modeling of food choices and behaviours, food and health trends and public education on children's nutrition needs. It also comprises certain cultural traits related to monetary value of food and prestige value of foreign food, which could influence the quality and 'foreignness' of food selected by the children's food providers.

The tourism industry falls primarily within the physical system, but also has a role in the cultural system. On the one hand, it impacts on the quantity of catering establishments available and their location. On the other hand, it also exposes local families to foreign and traditional menus by influencing the variety of restaurants available - some of which cater for foreign tastes and some of which showcase traditional cuisine. As with the other levels, Community level sub-systems and factors influence each other, as well as factors in both the Interpersonal and Intrapersonal level.

The outermost ecological level is the Macro level. Here again two major sub-systems are functioning: Natural processes and human-built processes. Two natural processes which effect children's food intake are the climate and seasons. The former affects global food production and sustainability of the local tourism industry. These have an indirect influence on children's food intake via food availability. Seasons have a more direct influence on children's intake, in that certain foods are provided or presented in particular ways by the gatekeeper according to season. Children also have seasonal food preferences. The human-built sub-system mainly comprises global processes related to food availability, food awareness and food and health knowledge.

Both the natural and human-built processes affect a multitude of factors in the lower ecological levels, though they also interact with each other. For example, the global food marketing and advertising machine often utilises TV to transmit its messages (Fig. 3). Occasionally, these messages are counteracted by other messages within global health campaigns which in turn generate national public health campaigns. The various messages communicated influence mothers' health and nutrition goals and/or children's sensory, cognitive and affective perceptions, ultimately determining mother's food provision directly, or as a result of children's food requests.

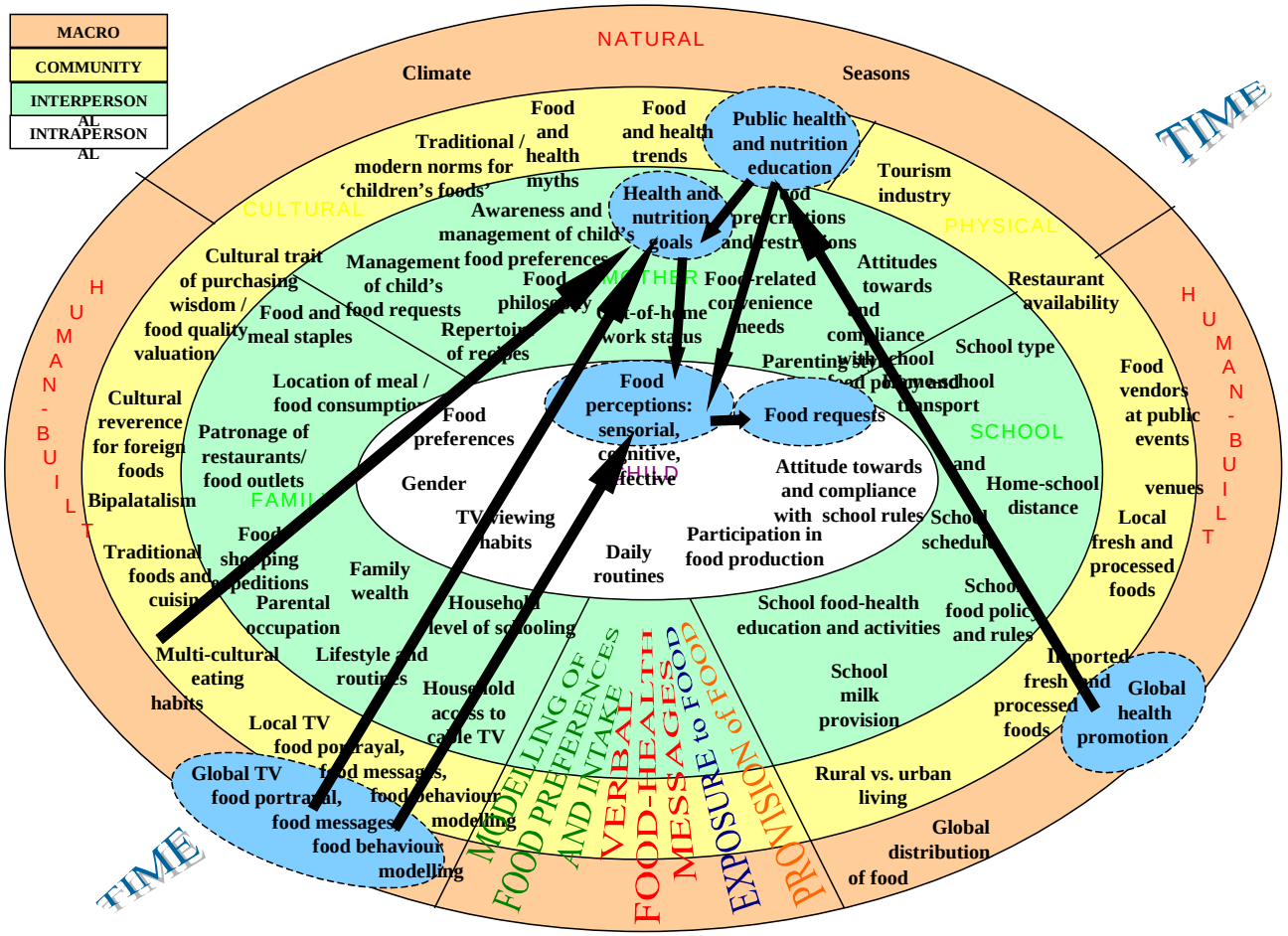

Figure 3: **Use of the model to show interaction of different factors at the Macro Level and across levels**

The 'Socio-Ecological Culture-Cuisine Food Model' also shows that there are four key processes which traverse the four ecological levels to influence children's food intake. These are provision of food, exposure to food, modelling of food preferences and intake and verbal food-health messages. These processes can determine the quality of a child's diet from a variety, culture-cuisine and nutritional perspective. Different factors are present in the four ecological levels which contribute towards these processes. For example, modelling of food preferences and intake may take place in various ways: Global TV food modelling acts directly, or complements or reinforces local TV food modelling. In turn, family members (including mothers, siblings, grandparents and other adult or young relatives and/or classmates, teachers and school personnel) may model food choices or food behaviours. This modelling may be intentional or inadvertent and may result in health conducive or health detracting perceptions amongst children. Ultimately, children's food perceptions may impact on their food requests or intake either directly or indirectly via preferences.

One final component of the model is the reference to the chronosystem. Here Bronfenbrenner's (1989a) concept is extended to explain that time influences children's food intake in two main dimensions. Certain foods are typically eaten at certain times of day, on particular days of the week, within particular seasons. This is the physical dimension. On the other hand, norms exist for child-appropriate foods and children's food socialisation occurs over time. In addition, children and their food providers experience re-socialisation as changes occur in food availability, food exposure and food-health messages. Cuisine-related acculturation also occurs over time. It is a gradual process, the speed of which differs amongst social groups. These are all manifestations of the social dimension. Thus, the chronosystem pervades all ecological levels, functioning obtrusively in certain settings and less obtrusively in others.

Application Of The Model

The 'Socio-Ecological Culture-Cuisine Food Model' has been developed around the phenomenon of Maltese children's food ecology. However, it may also be useful for other researchers who are studying children's eating habits, especially in Mediterranean countries, or countries where there is a strong tendency for Westernisation of the diet. Different factors of the model could be studied individually in more depth, or collectively to trace pathways of influence on children's food intake.

The overall goal of the proposed model is to facilitate the explanation and management of influences on children's food intake, given the complexity of this phenomenon. It can be seen as having three main functions:

- to explore the saliency of factors and/or processes influencing children's food intake;
- to identify intervention points for improving children's food intake from a health and culture-cuisine perspective;
- to offer a framework for international comparative research on factors and/or processes influencing children's food intake, as well as the Westernisation of children's diets.

In conclusion, this study has shown how a multitude of systems interact within the food consumption process also with young school-aged children. Health promotion initiatives and nutrition education interventions need to target the various determinants of children's food intake functioning at the different ecological levels. Importance should be given to the children's own food perceptions, beliefs and valuations, as well as the different routes of influence of the mother, grandparents, the school and television.

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suzanne.piscopo@um.edu.mt