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Abstract

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Keywords

family, diet, gatekeeper, influence, food, acquisition, preparation

Disciplines

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Gatekeeper Influence on Food Acquisition, Food Preparation, and Family Diet

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Abstract

The problems associated with overweight and obesity has focused attention on obesogenic, or obesity promoting environments. The home environment, in particular the role of the main food gatekeeper, has come under particular scrutiny for its impact on the family diet (Campbell et al, 2007; Coveney, 2004; Crawford et al, 2007). 326 US and 323 Australian gatekeepers are studied to understand relationships between healthy eating capability, food acquisition and food preparation behaviours, and satisfaction with the household diet. The results suggest that gatekeeper attitudes and perceived control over family diet play a significant role in shaping food-related behaviours and diet satisfaction. Impulsiveness, focusing on freshness, meal planning, and vegetable prominence in meals are also important behavioural factors for satisfaction with diet.

Keywords: Obesogenicity, food acquisition, food preparation, diet satisfaction

Gatekeeper Influence on Food Acquisition, Food Preparation, and Family Diet

Introduction

The dramatic rise in overweight and obesity is thought to be a result of many interrelated factors including easy availability of high energy density foods, the increased use of modern technology, and a general decrease in energy expenditure; the "obesogenic environment" (Swinburn, Egger, and Raza, 1999; Catford and Caterson, 2003). Whilst no single study can hope to examine all of the environments in which individuals interact, Lake and Townsend (2006) suggest that a useful approach to obesity prevention is to investigate environments that promote high energy intake. Swinburne *et al.* (2004) argue that the home environment is one of the most important settings in relation to shaping eating and physical activity behaviours and needs further investigation. The reported level of obesity in Australia and USA is such that this is an unsustainable health issue where different disciplines are being called upon to contribute to finding solutions. This study therefore investigates the household food environment as one area of significant influence, paying particular attention to household food gatekeeper; the person most responsible for food purchasing and preparation.

Conceptual Framework

Based on emerging empirical work we present an initial framework and propositions about the relationship between the gatekeeper, their food-related acquisition and preparation behaviours, and their satisfaction with the family diet (Figure1). The framework is based on several reviews of empirical research pertaining to the influence of environmental variables on health behaviours and outcomes (e.g. Giskes *et al,* 2007; Kamphuis *et al*. 2006; White, 2007). The framework is also influenced by several conceptual papers proposing relationships between environmental factors, personal factors and health outcomes (e.g. Glass and McAtee, 2006; Kremers *et al.* 2006; Maziak *et al.* 2007; Swinburn, Egger, and Raza, 1999).

Broadly, research has identified a number of elements in the home likely to influence obesity. These include the lack of availability of fruits and vegetables (Campbell and Crawford, 2001; Savige *et al*. 2007). Other influences promoting increased energy intake include participation of women in the workforce, less structured meal patterns, fewer household rules governing food and eating, and increased availability of energy dense foods in stores and at home (Catford and Caterson, 2003; White, 2007). Importantly, aspects gatekeepers' nutrition knowledge, cooking skills, attitudes and behaviours have been related to consumption of fruits, vegetables and energy dense foods (Arcan *et al.* 2007; Armitage and Conner, 1999; Campbell *et al.* 2007; Chandon and Wansink, 2007; Coveney, 2007).

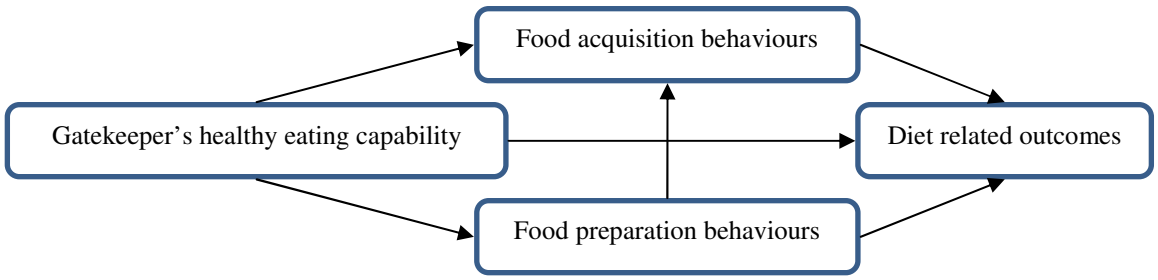

Figure 1: Conceptual Framework

This framework is built on the premise that gatekeepers have significant influence on household diet and what their family considers nutritious and appropriate to consume (Pliner, 2008; Wansink, 2003). Campbell *et al.* (2007) for example found that the influence of mothers as models for eating behaviour or as the providers of food was pervasive and associated with intake of high-energy foods. Drawing on the Theory of Planned Behaviour the healthy eating capability of the gatekeeper is a function of their attitude to family diet, susceptibility to influence, the degree of control over the eating habits of the family(Armitage and Conner, 1999) as well as their nutrition knowledge and food preparation skills (Catford and Caterson, 2003; Kremers *et al*. 2006). *Proposition1: The healthy eating capabilities of the gatekeeper positively influence (a) food acquisition behaviours, (b) food preparation behaviours, and (c) satisfaction with family diet.*

The way food is transformed and prepared has a significant impact on diet quality (Coveney, 2007). The framework incorporates food preparation behaviours, including the propensity to employ meal planning, the prominence of vegetables, the use convenience methods and ingredients and to have time constraints over food preparation tasks (Grunert, Brunsø, and Bisp, 1993; Bourcier *et al.* 2003; Buckley, Cowan and McCarthy, 2007). *Proposition 2: Food preparation behaviours will (a) influence satisfaction with family diet, and (b) mediate the relationship between healthy eating capabilities and satisfaction with family diet.*

Food acquisition strategies of gatekeepers are also noted to have an influence on the availability of fruits and vegetables in the home and on the availability of energy dense foods (Hersay *et al.* 2001). Research has found that impulse purchasing and a lack of self control can often result in a less than desirable basket of goods (Verplanken *et al.* 2005). The use of shopping lists on the other hand have been noted as a mechanism to help reduce impulse buying of high energy, high salt and low fibre foods and beverages (Huang *et al*. 2006). Other shopping strategies include the use of product information to make food choices (Grunert, Brunsø, and Bisp, 1993) and a focus on purchasing fresh rather than processed foods (Nijmeijer, Worsley and Astill, 2004). *Proposition 3: Food acquisition behaviours (a) influence satisfaction with family diet, and (b) mediate the relationship between healthy eating capabilities and satisfaction with family diet.*

In summary, this empirical analysis of this framework will help promote a better understanding the obesogenic influences that exist within the household.

Methodology

All items used to operationalize the framework were based on existing scales and were measured using seven point Likert scales. The items for the Theory of Planned Behaviour related variables (attitude, perceived behavioural control, and subjective norm) were based on Armitage and Conner (1999). Items for food acquisition and food preparation were drawn from Buckley, Cowan and McCarthy's (2007) work on convenience foods, Crawford et al's (2007) work on behaviours associated with fruit and vegetable intake, and Grunert, Brunsø, and Bisp's (1993) work on Food-related lifestyles. The scale for in-store food purchasing impulsiveness was based on Ailawadi, Neslin, and Gedenk (2001). The scale for diet satisfaction was developed specifically for this study and comprised 6 items.

The data were obtained through an online survey conducted over a one week period in April 2009. Respondents who qualified were those who identified as the main household food shopper and food preparer; the gatekeeper. The questionnaire was pre-tested through a local cohort of researchers and then with a subset 23 Australian and 26 US respondents. Pre-testing aided in evaluating the ability to complete the questionnaire, timing and question skips, and initial scale reliabilities. In total, data were collected from 323 Australian gatekeepers and 326 American gatekeepers. The sample consisted mostly of couples with children at home (approx 73%), and females (approx 70%). The mean age was 38years for Australian respondents and 41years for American respondents.

Analysis and Results

The analysis uses path modelling to examine two subsets of relationships in the framework; (1) gatekeeper capability-food acquisition-diet satisfaction, and (2) gatekeeper capability-food preparation-diet satisfaction. Prior to modelling, exploratory and confirmatory factors analyses were conducted to assess unidimensionality of each item to its first order factors and to assess discriminant validity. The results indicated that each item loaded significantly with its respective underlying factor and all loadings were significant at $p<.001$ with *t*-values greater than 4. The square root of the average variance extracted for each factor was greater than the correlations between the factors; which supported the measures' discriminant validity (Fornell and Larcker, 1981). These results and the associated internal consistencies suggested that the measures used in this study possessed appropriate reliability and validity. Finally, the data were also examined for measurement invariance finding that only weak invariance existed; thus the US and Australian data have been treated separately in subsequent modelling.

Results

Table 1 shows the results of the relationship between gatekeeper capability, food acquisition behaviour, and diet satisfaction (only direct influences on satisfaction are reported in the tables). The data explain 41.7% of diet satisfaction for Australian respondents and 46.7% for American respondents. The results show a relatively consistent set of influences for both countries. For gatekeeper capability the results indicate that satisfaction is positively related to both perceived behavioural control and the level of

nutrition knowledge, but is negatively related to attitude to healthy eating. For food acquisition factors the data show that satisfaction is positively related to having a focus on purchasing fresh foods but negatively related to impulsive in-store food purchasing.

Table 1: Influence of gatekeeper capability and food acquisition behaviour on satisfaction with diet

Variables	Australia		USA	
	Std Est	t-value	Std Est	t-value
Gatekeeper capability				
Attitude to healthy eating	-0.149	-3.024**	-0.265	-5.400***
Perceived behavioural control	0.206	3.977***	0.207	3.969***
Subjective norm	0.046	1.015ns	0.086	1.992*
Nutrition knowledge	0.169	2.755**	0.140	2.260*
Cooking skills	-.004	-0.078ns	0.082	1.494ns
Food Acquisition-related behaviours				
Use of shopping list	0.007	0.158ns	-0.007	-0.158ns
Product information use	0.063	1.142	0.106	1.664ns
Fresh food focus	0.349	5.921***	0.313	5.092***
In-store impulsiveness	-0.190	-4.271***	-0.137	-3.027**
R^2 (Diet satisfaction)	**41.8%**		**46.7%**	
Model fit	X^2 = 3.23 (df 1, p=.072); CFI, .997; TLI, .88; RMSEA, .083.		X^2=3.17 (df 1, p=.075); CFI, .998; TLI, .91; RMSEA, .082.	

Table 2 reports the results of the relationship between gatekeeper capability, food preparation behaviour, and diet satisfaction. The data explain 38% of diet satisfaction for Australian respondents and 43% for American respondents. As with Table 1 the results indicate that household diet satisfaction is positively related to both perceived behavioural control and the level of nutrition knowledge but is negatively related to attitude to healthy eating. For food preparation factors the data show that satisfaction is positively related to having a focus on vegetables in meals, the use of meal planning, and in the Australian model, the use of convenience methods, but not convenience ingredients.

Discussion, Conclusions, and Future Research

The data presented here are exploratory but provide a strong foundation for further development of a framework for investigating household obesogenicity.

Several issues can be highlighted through the results. Firstly the capability of the gatekeeper to exert control over family eating is an important factor in increasing their ability to deliver a less energy dense diet and raise their level of satisfaction with household eating. Factors that are likely to support this ability include an increased cooking capability (positively correlated with PBC) and having a higher level of nutrition knowledge. For policy makers, social marketing strategies to promote control through improved capability will have likely benefits in reducing one area of contribution to overweight and obesity. Social marketing strategies to promote a positive attitude towards healthy eating will also

likely increase the gatekeeper's critique of household diets thus positively influence the way food is acquired and prepared.

Social and government agencies should seek to improve shopping strategies, particularly reducing the level of impulsive purchasing and increasing a focus on fresh foods as this would also support improved family diet and satisfaction. To improve diet quality such agencies should further promote meal planning as a strategy to improve what foods are prepared and how they are prepared, including an increase in the range and volume of vegetables served, and possibly influence shopping behaviour i.e. reduced impulsiveness though more targeted food shopping.

In summary, the theoretical significance and uniqueness of this research is based around further disentangling and extending our understanding of interrelationships between important environmental, household and individual factors that contribute to overweight and obesity. By analysing the strength and direction of relationships between the factors in the household environment and diet, the outcomes of the research provide a foundation for improvements to family based diet interventions designed to influence positive energy balance-related behaviours. In summary, these results help inform a much broader research issue within the context of sustainability, particularly for households and health systems. The benefits of reducing overweight and obesity are many and include lower health problems, more productive healthy labour less public expenditure on health and significant benefits to the environment.

Table 2: Influence of gatekeeper capability and food preparation behaviours on satisfaction with diet

Variables	**Australia**		**USA**	
	Std Est	**t-value**	**Std Est**	**t-value**
Gatekeeper capability				
Attitude to healthy eating	-0.112	-2.202*	-0.228	-4.745***
Perceived behavioural control	0.177	3.286**	0.213	3.901***
Subjective norm	0.030	0.623ns	0.039	0.803ns
Nutrition knowledge	0.280	4.762***	0.273	4.579***
Cooking skills	-0.066	-1.108ns	-0.001	0.993ns
Food Preparation-related behaviours				
Convenience methods	0.100	1.962*	0.058	1.150ns
Convenience ingredients	-0.175	-2.946**	-0.092	-1.468ns
Meal planning	0.165	3.163**	0.110	2.044*
Time constraints	-0.050	-0.917ns	-0.094	-1.609ns
Vegies prominent	0.189	3.613***	0.218	4.103***
R^2 (Diet satisfaction)	**38%**		**43%**	
Model fit	X2 =12.34 (df 6, p=.055); CFI, .993; TLI, .936; RMSEA, .057.		X^2 =17.86 (df 6, p=.007); CFI, .990; TLI, .910; RMSEA, .078.	

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