The recall of food experiences in a real life context: a qualitative data analysis

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Abstract: The current context characterized by a *global obesity epidemic* amongst young population requires a better understanding on the way we can change the eating habits and the factors that influence eating self-regulation. In general, children and young adults are the ones that consume the most unhealthy products, so this part of the population remains the most vulnerable. In this paper, our aim is to synthetically review research on the role of cognitive processes such as memory in eating behavior. Our main purpose is to conduct a qualitative analysis on the memories of young Romanian students who attend a students' restaurant and to investigate this text's corpus through Tropes a software program especially designed for content analysis in the Romanian language. The results indicate that specific features of the memories that deserve to be mentioned are the words related to time and space, which suggests that most of the participants activated episodic memories. In the future research, we will investigate the role of these memories on food consumption.
Keywords: food recall, episodic memory, qualitative analysis, Tropes

1. Introduction

The obesity's phenomenon remains one of the modern world's problems and represents in the same time a permanent challenge for both the developing and developed countries (Flegal, 2005; Wang & Beydoun, 2007).

For a better understanding of obesity and other related disorders, researchers have long been interested in the development of eating habits which are not only a matter of satisfaction when it comes to physiological or psychological needs, but also a result of individual preference built through learning. When confronted with a food, even a novel one, people have certain expectations about its taste, flavor, texture or consistency based on previous experiences with that food or similar foods. Humans can learn to associate food flavors with postingestive consequences.

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In this light, these consequences can be positive such as pleasant evaluations which in turn may stimulate the food intake in subsequent occasions, or negative such as discomfort, nausea, food intolerance signals which lead to learned aversions (Birch, 1999).

The influence of cognitive factors for eating self-regulation defined as "the ability to initiate goal-related behaviors to consistently self-monitor dietary intake, to frequently apply self-regulatory strength to resist temptations" (Reed et al., 2015, p. 7) have been examined for some time highlighting that in order to lose or maintain weight one must resist the urge to eat when confronted with these food cues. This ability to resist involves both behavioral and cognitive control.

The beginning of this researches suggests that the role of memory in food behavior self-regulation starts with the observations made on the patient H. M. who is of 23 years old and was suffering from epilepsy. This was found in the magazine Neuropsychology from the late '60 (Milner, Corkin & Teuber, 1968). He suffered a loss of memory as a result of an experimental surgery on his brain to treat the epilepsy.

During the clinical observations it is noticed also that H. M. rarely mentioned that he was hungry, even if it was late when bringing food. To determine if his appetite was affected by the surgery, the effect of the increasing the quantity of food in a single meal was investigated. It was surprising not only that H. M. consumed almost of food, but he appreciated shortly before that he was hungry. It was concluded that *memory plays a significant role in the regulation of food behavior.*

Some recent research conducted by Higgs (2002; 2005; 2008; 2011; 2012) has proposed the idea that memory for recent eating influences the regulation of food intake. For example, it has been shown that enhancing memory for a recent eating experience can result in reduced intake later in the day, probably because memory for ingested food serves as a guide for making food related decisions.

Very few studies have investigated the effect of episodic recall on later food choice. In one study, recall of a specific occasion when vegetables were eaten and enjoyed led to increases in expected enjoyment of eating vegetables and an increase in vegetable choice (Robinson, Blissett, & Higgs, 2011a). In another two studies, the same researchers examined the effect that manipulating the memory of an eating episode had on remembered enjoyment and choice of the same food the next day (Robinson, Blissett, & Higgs, 2012) and the data suggests that recalling enjoyment of a food can be altered and that this has effects on later food choice and intake. Hence, the directions for our future studies include pushing existing domains deeply analysing the interplay of memory processes and decisions making.

There are different aspects of memory implicated in eating self-regulation. With regard to episodic memory, food related events are situated in a certain time and space (*having breakfast at home at the kitchen table; having dinner with X at Y* etc.). In the case of semantic memory, this has no precise localisation in time and space but the food related event obtains a personal significance (for example: *intoxication with a food that caused physical and strong emotional reactions*).

Operating the distinction between episodic and autobiographic memory, Nelson, 1993, as cited in Constantin, 2004 argues that episodic events of one's own existence (having breakfast this morning for example) do not become autobiographic events unless they have a particular, special significance. As "having breakfast" can be converted into an everyday fact which is part of the daily routine: memories regarding these actions can often be hard to recover and that is why a *daily or weekly diary* seems to be an important methodological suggestion even more than the food related event by the nature of this technique (that supposes temporal and spatial coordinates, the tendency of presenting in a narrative manner and questions with regard to thoughts and emotions that accompany the nutritional act) can be fit in the most recent episodic memory (days, weeks).

Besides, food as a consumer practice contributes to the definition of self which may take on many forms: from grandmother's recipes at restaurants specialized in traditional dishes or local products. These facets of the human act of eating creates a framework for the manifestation of social and cultural distinction communicating elements such as social status, ethnicity, beliefs, interpersonal relationships, personal values and representation of the world itself (Murcott, 1982).

The individual universe of personal meanings and memories is also interlaced through the contribution of early taste experiences by the exploration of the memory of food. A similar idea was brilliantly articulated in the novel with autobiographical narrative sequences by Marcel Proust, *In Search of Lost Time*, where the madeleine evoked a particular episode from the eating history of the writer, removing emotional surface experiences and familiar people. From this point of view, the human relationship to food is deep and personal. It is built on two dimensions. The first one starts from the biological to the cultural, from the nutritional function to the symbolic function, synthetizing what Fisher, in 1988 stated that food is "central to our sense of identity" (p. 275). The other one is a bridge between the individual and the collective, a real connection between psychological issues to the social aspects of life. In this light, foods carry different social connotations. Eating is, preferably, a social behaviour. But as intercultural research had shown, people also interact with eating through the lens of their culture. The sociological approach to studying

cultural aspects of eating is abundantly illustrating various facets of this phenomenon (for example migration studies see Morán, 2008; Raviv, 2001).

In this vein, Belasco, in 2008 highlighted the rich connection between food and identity describing it in a very familiar situation: "If a Happy Meal or pizza reminds us of dinner with Dad after the soccer match, then rejecting fat means rejecting Dad. The same might be said of a post-hockey game Tim Horton donut, sugar and trans fat notwithstanding" (p. 31), concluding that deciding where, when and what to eat may be difficult not only by consideration of convenience or accessibility, but also by conflicts within identity itself.

Summarizing, this theoretical background represents a rich inspiration for the social representation theory. At a general level, the social psychology of food and eating is concerned with how thoughts, feelings, and behavior affect food choice (Conner & Armitage, 2002). Or, remembering the elements which are associated in one's mind regarding food creates representations which concern the contents of everyday thinking and give coherence to our beliefs, ideas, and connections from "as easily as we breathe" (Moscovici, 1998, p. 214). Seeing that fact, it appears important to reveal the concepts around which food gravitates.

For Romania, the available information about food habits and patterns as well as other components of lifestyle are scarce. However, according to a recent study (Roman et al., 2015), the prevalence of obesity and being overweight amongst the young population in Romania was 9,9%, respectively 22,4%.

Our approach starts by appreciating that peoples' food choice is neither random nor haphazard, instead it, activates food patterns, habits and learned preferences.

Given the negative consequences of a aberrant food consumption amongst young adults characterized by unhealthy and overeating choices, the need to identify the causes or the factors that influence the food patterns of people who find difficulties in this area was shaped. The purpose of this paper is to explore through a qualitative analysis the free answers offered by participants in a task in which they were asked to recall some food experiences. The aim was to analyse what are the characteristics of respondents' memories are and to emphasize the type of memory activated by those.

2. Method
2.1. Participants

The participants consisted of 134 students (87 females and 47 males), and the sample as a whole was relatively young (M= 21.90, SD= 1.1), from all types of studies (bachelor, master, ph.D students, and postdoctorate researchers). They were recruited from "Alexandru Ioan Cuza" University students` restaurant in February 2016.

2.2. Procedure

In a first step, after they had verbally agreed to voluntarily participate, the students were randomly distributed in 6 experimental conditions, the between subjects design being 3x2 (a type of item remembered: vegetables, fried meat, holiday, respectively a type of recall: negative, positive). Also, they were asked to remember a food event from their personal past according to one experimental condition and to assess how pleasant or unpleasant it was on a scale from 1 to 10 (1 meaning very unpleasant, 10 – very pleasant). The general instruction for the food group (vegetable versus fried meat) was to report a favourite item (vegetable, respectively a type of fried meat). Afterwards, they narratively described the food experience: *Please think of a recent situation in which you have eaten… (vegetables/fried meat) and briefly describe this experience! (You may refer to anything that comes to your mind: flavor, texture, taste, time, place, social context, type of dishes).* For the holiday group, the students were asked to recall a vacation: *Please think of a recent situation in which you travelled and briefly describe this experience! (You may refer to anything that comes to your mind: time, people, location).* For all the experimental conditions the operator of the interview wrote down the words. In the end, in order to highlight the valence of recall (positive versus negative), the students were asked to remember the most pleasant/positive experience related to vegetables (group 1), fried meat (group 2), trip (group 3), respectively the most unpleasant/negative experience related to vegetables (group 4), fried meat (group 5), trip (group 6) and to mention the first key words that they associate in their mind.

2.3. Measures

Operators who recruited the participants collected the verbal data from the students writing on paper all the words that they recalled describing the particular situation. The text corpus was processed using the Tropes software.

3. Results

For the content analysis (qualitative type) we used the *Tropes* software , 8.2 version for the Romanian language. This is a program developed by Pierre Molette and Agnès Landré, based on the work of Rodolphe Ghiglione. The Romanian version of this program was developed by the UEFISCDI, between 2009 and 2011, in Strategic Projects, being in continue evolution. By reference to our research, the main indices that we used in the content analysis are referential indices, with the purpose of identifying content representations using semantic fields which were more frequent.

Based on semantic classifications proposed by Tropes we conducted a scenario analysis for two recalled item (food, non-food: trip), building two texts

which contain all the answers offered by the volunteers from those conditions either positive or negative.

Table 1. The main lexical- semantic analysis results for food experiences

| General features	
Style of the text	Rather declarative
Setting	In the real
Most characteristic parts of the text	*Special taste of the meal, neutralizes the taste of other foods.* *Lunch, hungry, I did not pay attention.* *I ate carrots with rice.* *Meat, fries, tomato salad, pleasing combination.* *I ate fast food meat.* *I had lunch with roommates.* *At dinner, steak fries, were enjoyable.* *Home, grilled, well-seasoned.* *Mashed potatoes, chicken breast with friends.* *Shawarma, salad, potatoes with my boyfriend.*
Frequent word categories	Stative verbs: 66,8% (mostly *to have*) Nouns: 49% (salad, vegetables, friend) Adjectives: 36% (good, pleasant) Time modality: 7,5% (*now*, *yesterday*) Place modality: 7,5% (*home*)

We note that the text has a declarative style, characterized by the fact that the students expressed a statement about circumstances, beings and objects using rather than using verbs such as "to think", "to believe", etc. Moreover, it is a realistic statement to highlight the salient presence of static verbs and nouns. It is also interesting to observe that referring to the adjectives the most commonly evoked references to the adjectives "good" and "pleasant" which underline that the participants when asked to recall a general situation related to food / holiday, they mainly remembered the positive experiences.

Table 2. The main lexical-semantic analysis results: referential fields examples and frequencies.

Reference semantic fields	Example of words	Frequencies
Food products	*Salad, vegetables, meat, cheese, cucumber, corn, cauliflower, pas*	0071
Relationships	*Family, friend, friends*	0032
Environment	*Snow, mountain, student hostel, oven*	0024
Time	*Holiday, afternoon, morning, summer, winter*	0019
Taste	*Taste, flavour*	008

Carefully examining the semantic categories proposed by Tropes, we developed a scenario in order to analyse the descriptions and answers referring to memories that captures a main universe (that of experiences) and subordinate categories (food, non-food: holiday, time and chronology, spatial dimensions, interpersonal relationships). Presented below is a chart which focuses on the dichotomy actant – acted on the most frequent category: food experiences.

Figure 1. Actant-acted dimensions on food memories.
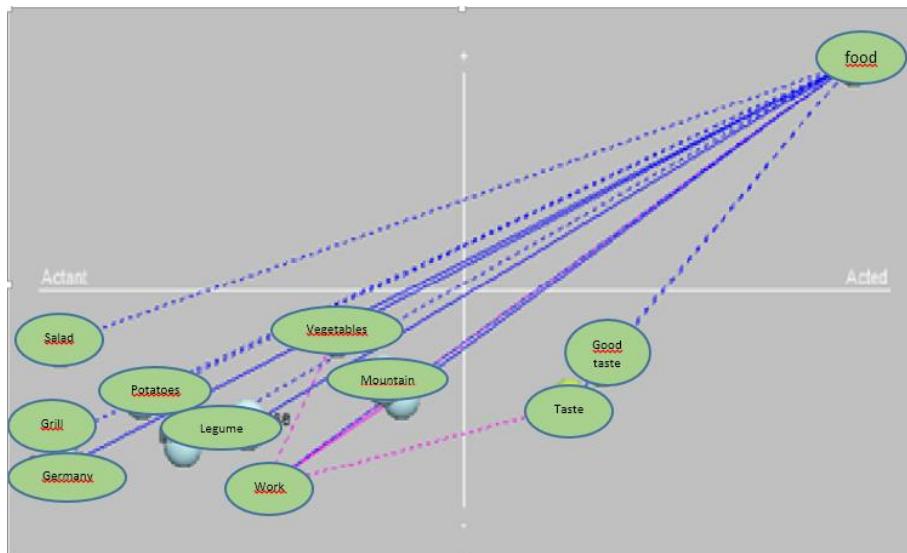
Tropes analyse relations of any references used a form showing how networks are interwoven in the text. In our example, the text is dominated by the central concept of "vegetables" (it has the highest frequency). Tropes shows

relations with all references to which the actant refers. A star is displayed graphically in order to facilitate the perception of textual space.

Figure 2. A star graph of the category of vegetables.
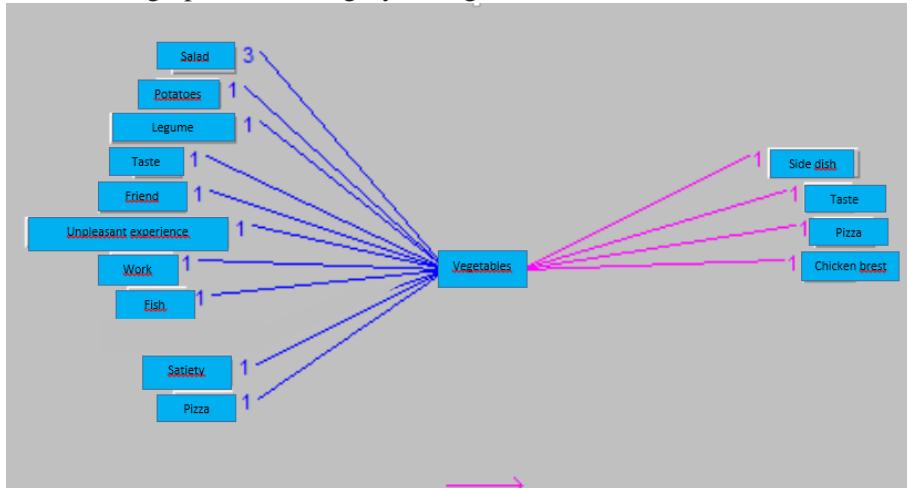
Figure 3. An area graph for the category of interpersonal relationships
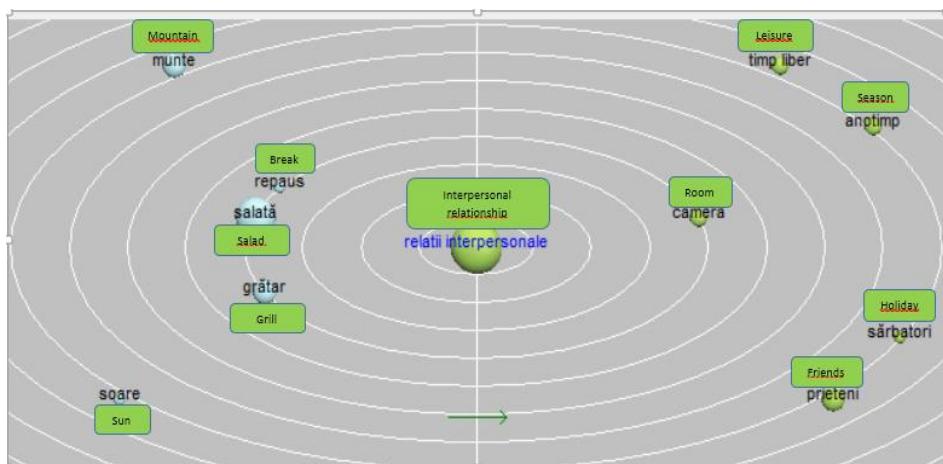
The second salient feature of the constructed scenario is interpersonal relationships. Below is an illustration for this graphic type area:

We note that around the universe relations „gravitates" to a series of key concepts: *salad*, *break*, *grill*, *friends*, *leisure* etc. which gives a general picture on how relevant they are supported and developed through one's eating behavior. There are also time (*holidays*, *season*) and space (*room*, *mountain*) indicators which underline rather retrieval of episodic memories.

4. Discussion

The above qualitative analysis points out a number of findings. The first is that, as was requested by the operator, the participant was asked to recall experiences, food or non-food, which is consistent with the reported frequency of the Tropes program.

Also, a significant component of semantic analysis showed interpersonal relationships as playing a central role in the general context created by food (as shown in figure 3). In this light, the students evoked people who kept company, usually family. This finding appears to be intuitive because eating in childhood and youth is thought to be influenced by multiple figures, the most significant of these being friends, peers and parents (Birch & Davison, 2001). This particular aspect is also consistent with the other studies which emphasize that social influences are extremely powerful on eating behavior surpassing other types of influences even personal intentions and objectives (Herman, Roth & Polivy, 2003). A theory that is considered key to our understanding of the influence of individuals on one another's behavior is Bandura's (1977) "social learning theory". This theory proposes that the majority of human behavior is learned through the observation of others' behavior. From this perspective, young people may use information about the eating behavior of others as a guide as to what is the appropriate behavior in a given context (Higgs, 2015).

One other possible explanation that may underlie the effects of social context on eating is the operation of social norms. The humans in general have a highly developed capacity to learn from the behavior of others. It is also known that eating norms are followed because they provide information about safe foods and facilitate food sharing.

To sum up, mealtimes are contexts for beginning and ending conversations. For instance, mealtimes constitute universal occasions for members not only to engage in the activities of feeding and eating but also to forge relationships (Osch & Shohet, 2006). Peers and friends are perceived as important role models for the formation of young's people attitudes and behaviors. Social eating norms may constitute a novel target for interventions to encourage healthier eating (Higgs & Thomas, 2016).

In modeling studies, the presence of others may facilitate or inhibit intake, depending on how much these other people eat. Studies of impression management demonstrate that people tend to eat less in the presence of others than when alone. There are multiple mechanisms explaining social influences on eating: social

facilitation, modelling and impression management. Previous studies revealed that people tend to use the amount eaten by their companions as a regulatory guide, neglecting their psychological needs. Therefore, social context has a substantial impact on the amounts and types of food that individuals eat, especially in their youth. Using effective strategies based on these influences has great potential in promoting healthier nutrition.

Furthermore, when asked to recall a general situation related to food, respectively nonfood (trip), students remembered most of the time the positive experiences rather than the negative ones. One explanation for this situation is that when individuals are asked to generate memories in response to cue words, the retrieved memories often will be rated as personally significant and emotional (Rubin & Kozin, 1984).

A third observation is worth noting spatial and temporal nature of events are updated, which highlights a feature of episodic memories, describing specific experiences that take place in a specific time and space. But food events, like many other behaviors that we perform every day are likely to be classified as implicit memory. In other words, without the need for awareness or intention to keep a memory encoding these experiences, many of the meals that we have not stored in memory through a conscious effort. However, while the importance of memory and its involvement in training learning associations on appetite and motivation to produce or avoid eating behavior as a result of previous experiences enjoys long theoretical and empirical support, the role that memory of food experiences has in regulating eating behavior, specifically control, is a broad interest among both current cognitivist psychologists and neurologists, respective of the nutritionists and dietitians.

In future studies, we will investigate the role of these memories on food choices and food intake. If evidence indicates that food memories is likely to influence food consumption, the incorporation of recall-eating principles into interventions could provide a novel approach to aid and regulate eating behavior by enhancing conscious awareness regarding food stimuli.

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