



# Look who's cooking. Investigating the relationship between watching educational and edutainment TV cooking shows, eating habits and everyday cooking practices among men and women in Belgium



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## ABSTRACT

Television (TV) cooking shows have evolved from focusing on educating to focusing on entertaining, as well. At present, educational TV cooking shows focus on the transfer of cooking knowledge and skills, whereas edutainment TV cooking shows focus on entertaining their viewers. Both types of shows are ongoing success stories. However, little is known regarding the shows' links with the cooking and eating habits of their audiences. Therefore, the current study investigates the relationship between watching an educational or edutainment TV cooking show and one's cooking and eating habits. Given public health concerns regarding the decline in cooking behaviors and the simultaneous increase in caloric intake from food outside the home, this study suggests a promising intervention.

The results of a cross-sectional survey in Belgium ( $n = 845$ ) demonstrate that the audiences of educational and edutainment TV cooking shows do not overlap. Although there is little connection between watching specific shows and eating behavior, the connection between watching shows and cooking behaviors varies across gender and age lines. Behaviors also differ depending on whether the viewer is watching an educational or edutainment cooking show. For example, men of all ages appear to cook more often if they watch an educational show. However, only older men (above 38 years) seem to cook more often if they watch an edutainment TV show. The results demonstrate that the relationship between watching TV cooking shows and cooking habits warrants further investigation.

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## 1. Introduction

Across the globe, the amount of time spent on cooking has dropped significantly in recent decades (Kaufman, 2010; Warde & Hetherington, 1994), including in Belgium (Daniels, Glorieux, Minnen, & van Tienoven, 2012). For instance, parents who have high-pressure jobs often rely on convenience foods and fast food (Devine, Connors, Sobal, & Bisogni, 2003; Devine et al., 2006). At the same time, however, television (TV) cooking shows are experiencing continued success (e.g., de Solier, 2005; Collins, 2009). What first seems to be a contradiction may be explained by the fact that TV cooking shows have evolved from being purely educational shows to shows that also incorporate entertainment. Accordingly, people are not merely watching cooking shows to improve their

cooking skills but to enjoy the entertaining TV show. It has been suggested (e.g., Caraher, Lang, & Dixon, 2000) that the consumption of TV cooking shows is driven by entertainment motives, rather than a desire to learn how to cook. In recent years, TV cooking shows have come to cater to these entertainment demands (Collins, 2009; Chao, 1998; de Solier, 2005; Ketchum, 2005). However, even today, educational cooking shows still exist. Although previous studies have investigated relationships between TV cooking shows in general and cooking skills, cooking practices, and eating habits (Caraher et al., 2000; Clifford, Anderson, Auld, & Champ, 2009), so far, no study has investigated the potential differences between the audiences of educational TV cooking shows and the audiences of entertainment or edutainment TV cooking shows. Therefore, the aim of this work is to investigate the relationships between TV cooking shows, eating habits, and cooking behaviors among adult men and women, making a distinction between educational and edutainment TV cooking shows. This work begins with an overview of the history of TV cooking shows and a definition of the landscape

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today, followed by a study investigating whether and how educational and entertainment TV cooking shows relate to cooking behaviors and eating habits and whether these relationships may be moderated by gender and age.

### 1.1. TV cooking shows: from education to edutainment

The history of cooking on TV dates back to the 1930s. Marcel Boulestin, who appeared on BBC television in 1937, was the first cook on television (Bonner, 2009). Only a decade later, America's first television cook, James Beard, appeared on screen with his 15-min segment "I Love to Eat" in a magazine program (Bonner, 2009). After World War II, television entered the households of many and became a prime source of entertainment. TV cooks became genuine stars, and they attempted to transform cooking from a household chore into a pleasurable activity (Rousseau, 2012). Cooking was no longer only about catering to the demands of spouses and children; it was primarily about enjoyment (Hollows, 2007). These themes are still reflected in modern TV cooking shows, such as Rachel Ray's programs on the Food Network in the US, Sophie's kitchen, SOS Piet, and Daily Meal, which are broadcasted on public and commercial TV channels in Belgium, most cooking shows broadcast on the BBC in the UK, and those related to the magazine BBC Good Food. These shows' core aim is to explain to laypeople how to prepare a meal from scratch.

"In the early twenty-first century, much of the Western world is in the midst of a boom in food television" (de Solier, 2005, p. 465). Several channels started to focus solely on food. Examples of these channels include America's Food Network, launched in 1993 (<http://www.foodnetwork.com>), and Britain's UK Food, launched in 2001 (<http://www.foodnetwork.co.uk>). In Belgium, the first food network would only appear when Njam TV began broadcasting food programs 24/7 in 2010 (<http://njam.tv>). Although the Food Network began with many programs focusing on food education, the format of food TV shows has gradually shifted towards entertainment, including travel shows and food competition shows (Collins, 2009; Ketchum, 2005; Nathanson, 2009). For instance, Jeroen Meus (a popular Belgian chef who became famous with his cooking show Daily Meal, in which he teaches the viewer how to prepare a savory meal in less than half an hour) hosts 'Goed Volk', a recent cooking program on the public broadcast system in Belgium that investigates the lives of people from specific communities (e.g., cowboys in Texas or sumo wrestlers in Tokyo) through their cooking habits. Although cooking and the kitchen take prominent places in this program, the core aim of the program is not to educate people about cooking.

Since the 1990s, the explosion and diversification of TV cooking shows has made it difficult to categorize these shows into genres that capture all the variations (de Solier, 2005). Analyzing TV cooking shows in Britain, for instance, Strange (1998) lists *Personality* shows, which revolve around a celebrity chef; *Tour Educative* shows, focusing on traveling; *Cookery Educative* shows that clearly demonstrate how to prepare a meal; and *Raw Educative* shows, focusing on the processing of raw ingredients into edible cooked meals. In a similar typology of American Food Network shows created almost a decade later, Ketchum (2005) makes a distinction between shows that focus on both education and information and shows that broadcast for the sake of mere entertainment. In the mere entertainment shows, such as food travel shows, few real chefs appear, competitive aspects come into play, and few cooking instructions are given. Food is a means of entertaining the audience. Jamie Oliver's *Oliver Twist*, for instance, focuses predominantly on Oliver's own sex appeal and hyperactive performances (Hollows, 2003). The educational cooking shows, in contrast, focus on instructing their audiences on how to prepare a meal, often based

on real-life time constraints (e.g., preparing a simple meal in 30 min) and/or using specific ingredients (e.g., preparing a meal with what is left in your fridge). Other educational cooking shows make gourmet, forgotten, or exotic foods more accessible to the home cook and perform their cooking either in a studio, a home kitchen, or in front of a live audience. The recipe is the main focus and thus is always available to the public, e.g., on the related Internet site, and the chefs explain to viewers how to prepare a meal by manipulating unprocessed foods.

In sum, TV cooking shows seem to have evolved from being predominantly about educating viewers to being a mix of education and entertainment. Traditional *educational TV cooking shows* continue to exist, and in addition to these shows, *entertainment TV cooking shows*, such as many modern lifestyle and reality TV shows related to food, have entered the landscape. Entertainment TV cooking shows typically emphasize elements other than cooking (Harbridge, 2013). Audiences of these shows gain pleasure from their visual appeal and the opportunity to escape into a different world (Chao, 1998). Then, again, according to de Solier (2005), entertainment TV cooking shows may best be labeled *edutainment TV cooking shows* because one can question whether entertainment TV cooking shows still contain an educational element. Therefore, the term *edutainment TV cooking shows* will be used from this point forward to refer to all TV cooking shows with a stronger emphasis on entertainment compared to education. In addition, the term *educational TV cooking shows* will be used to refer to TV cooking shows with an emphasis on education.

In Belgium, both educational and entertainment TV cooking shows dominate the current TV landscape. In the 1970s, the first TV cooking show, 'Watch and Cook', was broadcast on public television. The chef taught the audience how to prepare a delicious meal (Widart, 2005). In the 1980s, cooking TV shows began to be hosted by a chef in his/her home environment, and in the 1990s, the number of cooking shows increased significantly. TV shows were now also broadcast on commercial channels, and the shows became more entertaining. Today, TV cooking shows, both edutainment and educational shows, are very popular among the Belgian public, and these shows have an important place in the current television landscape.

### 1.2. Associations between the consumption of educational and edutainment TV cooking shows and cooking and eating habits

It has been suggested that across all ages, increased TV viewing results in higher intake of snacks and unhealthy foods (e.g., Blass et al., 2006; Dietz & Gortmaker, 1985; Higgs & Woodward, 2009; Rey-Lopez et al., 2011; Robinson, 1999). However, most of these studies do not focus on TV cooking shows, and only a few studies have investigated the relation between watching TV cooking shows and eating habits. In line with the predominant view that television viewing relates to less healthy food intake, Bodenlos and Wormuth (2013) have shown that more sweet snacks were consumed among individuals who watched a TV cooking show compared to those who watched the nature program. That study investigated the intake of vegetables and snacks immediately after watching a short episode of a TV cooking show versus a nature program. In another study, Clifford et al. (2009) focused on eating habits and food knowledge among students who watched several episodes of a TV cooking show. They concluded that TV cooking shows may positively influence the knowledge of their audience but do little to influence behavior. Students who watched four episodes of a TV cooking show knew significantly more about fruit and vegetable recommendations compared to a control group. However, no changes occurred in terms of self-efficacy or intake. Finally, however, Caraher et al. (2000) have shown that, although TV cooking

shows are not primary resources for people to learn how to cook, an association does exist between watching TV cooking shows and off-screen cooking habits. In summary, these studies lead to conflicting views on whether TV cooking shows may be a successful intervention option to promote healthy eating habits. Therefore, more research into this domain seems timely and necessary.

The aim of this study is to further disentangle the association between TV cooking shows, eating and cooking habits. More precisely, it will explore whether different associations can be found between cooking and eating habits and watching educational versus edutainment TV cooking shows, which we believe has not been studied before. Clifford et al. (2009) only used an educational TV cooking show in their study. Caraher et al. (2000) studied TV cooking shows in general, not specifying what types of shows their respondents watched. The show that the respondents in Bodenlos and Wormuth (2013) study watched was “a 10-min cooking show with Rachel Ray from The Food Network” (p. 9). No further information was presented regarding this show, which may have been Ray’s more educational 30-min meals or one of her edutainment/lifestyle shows.

In addition, this paper will investigate whether gender and age affect these relationships. The relationship between watching TV shows and cooking frequency may be different for men and women. Despite the fact that men’s cooking seems to be on the rise (e.g., De Backer, 2013; Moser, 2010; Sellaeg & Chapman, 2008), women have always and continue to engage in daily cooking practices more frequently (e.g., Charles & Kerr, 1988; Daniels et al., 2012; De Backer, 2013; DeVault, 1994; Murcott, 1982). With regard to age, as mentioned above, the results of the study by Caraher et al. (2000) show that cooking shows are not the primary resources to learn how to cook, but TV cooking shows do become more important with age: they appear to be more influential for older than younger men and women.

## 2. Method

### 2.1. Sample

A convenience sample of 945 people volunteered to take part in this study. Participants were recruited via a group of undergraduate students who were asked to collect surveys in return for class credit. The students were instructed to search for one man and one woman from each of six age categories: under 20, 21–30, 31–40, 41–50, 51–60, and over 60. This was performed to obtain an equal number of men and women and diversity across age categories because age and gender were the main moderating variables in our study. Respondents could either take part in an online survey or fill out a paper survey. One student, who did not participate in the data collection, entered data from the paper surveys. All students who helped recruit respondents were blinded to the hypotheses. This project was part of a course in which instructions to collect data were given at the start of the course and the data had to be collected by mid term. The details and (preliminary) results of this study were presented in the final lecture.

The sample is representative of the Belgian population in terms of gender (see Table 1). Regarding age, we have a significant overrepresentation of the youngest three age groups (18–40) and a significant underrepresentation of the oldest age group (over 60). Therefore, we cannot generalize to a wider population.

In accordance with the American Psychological Association’s (APA) ethical guidelines, 100 participants were excluded because they were under 18 years of age. The final sample consisted of 845 Belgian adults (54.0% women) aged between 18 and 87 ( $M = 38.11$ ,  $SD = 19.15$  years). The majority (41.6%) of the participants were students, with the highest obtained degree being secondary

**Table 1**

Representativeness of the sample ( $N = 845$ ), compared to the Belgian population.

Socio-demographic variables	% In population	% In sample	z-value	p-value
<i>Age</i>				
18–20	3.4	20.1	26.1	<.001
21–30	12.7	31.2	15.8	<.001
31–40	13	7.6	4.7	<.001
41–50	14.3	14.6	.2	.80
51–60	15	13	1.6	.10
60+	22.52	13.5	6.3	<.001
<i>Gender</i>				
Men	49	46	1.7	.08
Women	50.9	54	1.8	.07

education. See Table 2 for a detailed overview of the socio-demographic variables describing the sample.

### 2.2. Procedure

This study followed the APA Ethical Guidelines for Research with Human Subjects; all participants were fully informed about the general scope of the study, informed consent was obtained from the participants, and no compensation was provided for participation. The University of Antwerp’s ethics committee for social science and humanities granted ethical clearance for this study. The survey began with questions about eating habits and cooking behavior. In the second part of the survey, participants were asked about their viewing of cooking shows, followed by general demographic questions.

### 2.3. Cooking TV shows

This study focused on two specific TV cooking shows, one educational and one edutainment cooking show. As a case study for an educational TV cooking show, the show ‘Dagelijkse Kost’ (translated as ‘Daily Meal’) is used. This show airs from Monday to Friday at 6:15 p.m. on national broadcasting television and is repeated daily at 12:15 a.m. and 12:20 p.m. Each episode lasts 15 min and is not interrupted by commercials. The show first aired in September 2010 and has since been very successful, attracting half a million viewers per episode on average (CIM, 2014). The show is complemented with cookbooks that have been listed as best-selling books in Belgium since 2012. A young man, comparable to the U.K.’s Jamie Oliver, hosts Dagelijkse Kost. Both men share the fact that they portray the ‘new lad’, meaning that a man takes up household tasks stereotypically associated with women, such as everyday cooking (Hollows, 2003). Meus is a popular chef among both men and women. The main focus of Dagelijkse Kost is instructing the audience in how to prepare a simple yet savory meal in less than half an hour (de Solier, 2005). The show focuses merely on how to prepare a meal, nothing else is discussed.

Next, among today’s TV cooking shows, a clear example of a food entertainment show is the reality show *Come Dine with Me*, in which strangers cook for one another and assign the host of each dinner ratings for ‘cooking skills’ and ‘entertainment skills’. The latter are often more important, which explains the high entertainment value of these shows. In Belgium, this show has aired with great success on commercial broadcasting television in the past years, with *Komen Eten* (translated and based on *Come Dine with Me*) being one of the most successful TV cooking shows since 2009. In Belgium, this show is aired from Monday to Thursday at 8:15 p.m. Each episode lasts 50 min, including commercials. On this show, food is prepared, instructions are given, and viewers can download recipes from the accompanying website. However, the focus of this

**Table 2**  
Socio-demographic characteristics of the sample (N = 845).

Socio-demographic variables	% of total	% of men	% of women	% of 18–20	% of 21–30	% of 31–40	% of 41–50	% of 51–60	% of 61+
<i>n</i>	845	389	456	170	264	64	123	110	114
<i>Age (Mean = 38.11)</i>									
18–20	20.1	17.5	22.4						
21–30	31.2	32.1	30.5						
31–40	7.6	8.5	6.8						
41–50	14.6	12.9	16						
51–60	13.0	14.1	12.1						
61+	13.5	14.9	12.3						
<i>Working situation</i>									
Student	41.6	37.8	44.9	98.2	56.1	3.1	.8	0	0
Unemployed	6.7	5.7	7.6	0	3.1	3.1	3.3	6.8	76.9
Part-time employed	13.0	6.3	18.9	1.2	6.1	12.5	26.8	34.0	12.8
Full-time employed	38.7	50.3	28.7	.6	34.7	81.3	69.1	59.2	10.3
<i>Educational level: highest obtained degree</i>									
Elementary school	8.9	8.7	9.0	24.7	1.5	1.6	2.4	1.8	20.2
Vocational secondary	5.7	5.9	5.5	.6	3.0	6.3	5.7	6.4	18.4
Secondary education	42.6	42.7	42.5	74.1	40.5	25.0	35.0	22.7	37.7
Polytechnical/Vocational University	23.7	23.7	23.7	.6	23.1	43.8	37.4	38.2	19.3
University Bachelor	6.0	4.1	7.7	0	15.5	1.6	1.6	3.6	2.6
University Master	12.1	13.6	10.7	0	14.8	18.8	17.1	25.5	1.8
Post-University (e.g. PhD)	1.1	1.3	.9	0	1.5	3.1	.8	1.8	0
<i>Living situation</i>									
Living alone	7.6	5.9	9.0	.6	9.1	14.1	4.1	4.5	17.5
Living with partner (no children)	19.5	21.9	17.5	0	16.3	25.0	2.4	20.9	70.2
Living with partner and children	29.7	29.0	30.3	0	4.9	53.1	91.1	72.7	10.5
Living with roommates	4.0	3.9	4.2	1.2	9.1	1.6	2.4	1.8	1.8
Living in student housing during the week and with parents during the weekend	10.9	9.3	12.3	28.2	16.7	0	0	0	0
Living with parents	28.3	30.1	26.8	70.0	43.9	6.3	0	0	0

show is entertaining the audience, as exemplified by the fact that participants not only need to rate each other in terms of cooking skills but in terms of entertainment skills as well. The entertainment component of the show is a feature that is being highlighted in all of its international versions. The male voiceover plays a crucial part in this, often playfully mocking participants' behavior. The real pleasure of watching these shows is their comedy and the fact that they satisfy the audiences' appetite for neighborhood voyeurism and culinary competition (Harbridge, 2013).

#### 2.4. Measures

All survey questions were pre-tested by a group (N = 10) of graduate students for clarity and ease. Although similar scales were originally used for eating and cooking habits, this test phase indicated that it was best to add two more categories for cooking: 'never' and 'a few times a year.' Male participants indicated that the 'few times a year' category is best suited for those who cook for special occasions and that these individuals should be separated from those who never cook.

##### 2.4.1. Eating habits – meal types

To obtain an indication of their intake of healthy and unhealthy foods, participants were first asked to indicate how often they consumed home-cooked meals, ready-made meals, and fast-food meals. In line with previous research (De Backer, 2013), a home-cooked meal was defined as *a warm meal where at least one or more fresh ingredients were processed into cooked food*. This allows for the use of pre-processed elements, as is often the case in modern cooking (Beck, 2007; Lang & Caraher, 2001), but by adding the statement that one or more ingredients must be fresh, participants will not score heating a convenience meal as home cooking. Ready-made meals were defined as meals that require minimal preparation prior to consumption (e.g., they simply have to be heated). Fast food was defined as a quick and easy meal that

requires no further preparation after acquisition. All questions were measured on a scale in which 1 = less than monthly, 2 = a few times a month, 3 = weekly (i.e., once a week), 4 = a few times a week (i.e., 2–4 days a week) 5 = almost daily (i.e., 5–6 days a week), and 6 = daily.

##### 2.4.2. Eating habits – food groups

In addition to questions about the meal types, participants were also asked to indicate how often they consumed fruits and vegetables as indicators of healthy food groups and salty snacks and sweet snacks as indicators of unhealthy food groups. All questions were measured on a scale in which 1 = less than monthly, 2 = a few times a month, 3 = weekly, 4 = a few times a week, 5 = almost daily and 6 = daily.

##### 2.4.3. Cooking frequency

Participants were asked how often they prepared home-cooked meals, using a scale on which 1 = never, 2 = a few times a year, 3 = monthly, 4 = a few times a month, 5 = weekly, 6 = a few times a week, 7 = almost daily, and 8 = daily.

##### 2.4.4. Watching TV cooking shows

Neither TV cooking show is broadcasted daily or even on a similarly regular basis. To use a similar measurement instrument, for both the *Komen Eten* and *Dagelijkse Kost* shows, participants were asked to indicate how often they watched each show on a scale in which 1 = never, 2 = a few times a year, 3 = a few times a month, 4 = almost every episode, and 5 = every episode.

##### 2.4.5. Demographic information

Participants answered questions regarding gender, age, highest obtained educational degree (elementary school, vocational secondary, secondary education, polytechnic/vocational, university bachelor's, university master's, or post-university), work situation (student, unemployed, part-time employed, or full-time



employed), and living situation (living alone, with partner (no children), with partner and children, with roommates, in student house, or with parents).

## 2.5. Data analyses

Independent t-tests were conducted to explore gender differences in watching TV cooking shows, eating habits, and cooking habits. MANOVA and ANOVA analyses were used to examine associations between watching cooking shows and eating/cooking habits. Separate analyses were performed for male and female subsamples because of anticipated gender differences in the preparation of home-cooked meals and eating habits, with women, on average, consuming a healthier diet compared to men (e.g., Baker & Wardle, 2003; Wardle et al., 2004). Age was used as an independent variable in all analyses because of the expected age differences, especially with regard to cooking practices.

To reveal whether and how watching an educational or edutainment TV cooking show is associated with everyday cooking habits, ANOVA analyses were conducted on the male and female subsamples. Cooking behavior was entered as the dependent variable, and frequencies of watching both TV cooking shows and age were entered as independents. The model investigated the main effects of both TV cooking shows and age, as well as the interaction effects between age and each TV cooking show (using the custom model option).

Because we did not know whether the audiences of educational and edutainment TV shows overlap and interaction effects need to be taken into account in the analyses, a correlational analysis was performed. The results show that the frequencies of watching the educational TV cooking show *Dagelijkse Kost* and watching the edutainment TV cooking show *Komen Eten* are not related,  $F(1,812) = 0.9$ ,  $p = .76$ ,  $\eta = .25$ . Thus, it is not the case that those who frequently watch *Dagelijkse Kost* also frequently watch *Komen Eten* or vice versa.

Finally, to investigate whether and how watching an educational TV cooking show or watching an edutainment TV cooking show affects the everyday eating habits of viewers, MANOVA analyses were conducted on the male and female subsamples. In the first MANOVA analysis, the frequencies of eating home-cooked meals, ready-made meals, and fast-food meals were entered as dependent measures. In the second MANOVA analysis, the consumption of fruit, vegetables, sweets, and salty snacks were entered as dependent measures. For all MANOVA analyses, the frequencies of watching each TV cooking show and age were entered as independent measures, and the model investigated the main effects of both TV cooking shows and age and the interaction effects between age and each TV cooking show.

## 3. Results

### 3.1. Gender differences in watching TV cooking shows, eating habits, and cooking habits

Men ( $M = 2.24$ ,  $SD = 1.13$ ) and women ( $M = 2.23$ ,  $SD = 1.15$ ) do not differ in their viewing behaviors regarding the educational TV cooking show,  $t(818) = .03$ ,  $p = .98$ . Similarly, no difference between men ( $M = 2.15$ ,  $SD = 1.12$ ) and women ( $M = 2.28$ ,  $SD = 1.21$ ) was found for watching the edutainment TV cooking show,  $t(811.56) = .02$ ,  $p = .10$ .

In terms of eating habits, women ( $M = 4.88$ ,  $SD = 1.09$ ) eat more home-cooked meals than men ( $M = 4.61$ ,  $SD = 1.14$ ,  $t(835) = -3.49$ ,  $p < .01$ ), whereas men ( $M = 2.09$ ,  $SD = 1.08$ ) consume more ready-made meals than women ( $M = 1.93$ ,  $SD = 1.01$ ,  $t(831) = 2.24$ ,  $p < .05$ ). Men ( $M = 2.68$ ,  $SD = 1.00$ ) also eat more fast food than women

( $M = 2.34$ ,  $SD = .94$ ,  $t(838) = 5.07$ ,  $p < .001$ ). Further, women eat more fruit ( $M = 4.65$ ,  $SD = 1.39$ ,  $t(840) = -6.61$ ,  $p < .001$ ) and vegetables ( $M = 5.03$ ,  $SD = .97$ ,  $t(809.28) = -4.98$ ,  $p < .001$ ) compared to men ( $M_{\text{fruit}} = 4.02$ ,  $SD = 1.40$ ;  $M_{\text{vegetables}} = 4.69$ ,  $SD = .99$ ), whereas men ( $M = 3.12$ ,  $SD = 1.22$ ) eat more salty snacks than women ( $M = 2.88$ ,  $SD = 1.17$ ,  $t(835) = 2.90$ ,  $p < .01$ ). In addition, men ( $M = 3.79$ ,  $SD = 1.34$ ) and women ( $M = 3.90$ ,  $SD = 1.46$ ) eat sweet snacks equally often,  $t(837) = -1.15$ ,  $p = .25$ . Finally, women ( $M = 5.68$ ,  $SD = 2.26$ ) appear to cook more often than men ( $M = 4.05$ ,  $SD = 2.44$ ,  $t(798.32) = -10.00$ ,  $p < .001$ ).

### 3.2. Watching educational and edutainment TV cooking shows and cooking behavior

#### 3.2.1. Female participants

The results of the ANOVA analyses on the daily cooking habits of the female participants show a main effect of age on cooking behavior,  $F(1, 430) = 16.56$ ,  $p < .001$ ,  $\eta^2 = .037$ . The parameter estimates of the significant results show that compared to younger women (under 38 years), older women (38 years and older) more frequently cook meals,  $B = .05$ ,  $S.E. = .01$ ,  $p < .001$ ,  $\eta^2 = .037$ . No significant relationships were found between cooking habits and watching an educational TV cooking show,  $F(1, 430) = 2.42$ ,  $p = .12$ ,  $\eta^2 = .006$ , or watching an edutainment TV cooking show,  $F(1, 430) = 2.54$ ,  $p = .11$ ,  $\eta^2 = .006$ . In addition, the interactions between age and watching both TV cooking shows and cooking behaviors were not significant (educational TV cooking show,  $F(1, 430) = 2.08$ ,  $p = .15$ ,  $\eta^2 = .005$ , and edutainment TV cooking show,  $F(1, 430) = 2.41$ ,  $p = .12$ ,  $\eta^2 = .006$ ).

#### 3.2.2. Male participants

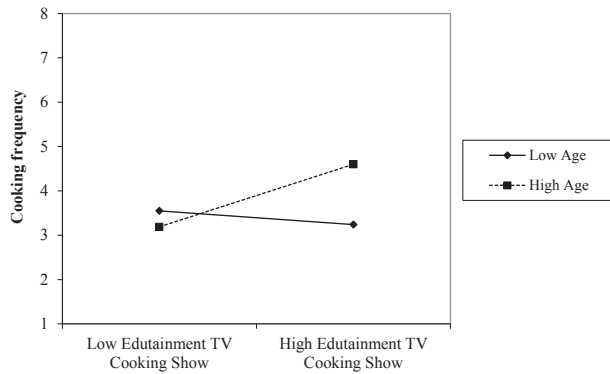
The results of the ANOVA analyses on the daily cooking habits of the male participants exhibited no significant effect of age on cooking behavior,  $F(1, 371) = 3.21$ ,  $p = .07$ ,  $\eta^2 = .009$ . Significant relationships were found between cooking habits and watching an educational TV cooking show,  $F(1, 371) = 4.24$ ,  $p < .05$ ,  $\eta^2 = .011$ , and watching an edutainment TV cooking show,  $F(1, 371) = 3.95$ ,  $p < .05$ ,  $\eta^2 = .011$ . The parameter estimates of these results show that compared to men who less frequently watch educational TV cooking shows, men who watch these shows more frequently are more likely to cook,  $B = .49$ ,  $S.E. = .23$ ,  $p < .05$ ,  $\eta^2 = .011$ . In addition, compared to men who less frequently watch an edutainment TV cooking show, men who watch these shows more frequently are less likely to cook,  $B = -.53$ ,  $S.E. = .26$ ,  $p < .05$ ,  $\eta^2 = .011$ .

No significant interaction appeared between age and the consumption of educational TV cooking shows,  $F(1, 371) = .53$ ,  $p = .46$ ,  $\eta^2 = .001$ . The results do show a significant interaction between age and the consumption of edutainment TV cooking shows,  $F(1, 371) = 9.09$ ,  $p < .01$ ,  $\eta^2 = .024$ . Examining the parameter estimates shows that controlling for age, men are more likely to cook when they more frequently watch edutainment TV cooking shows,  $B = .02$ ,  $S.E. = .01$ ,  $p < .01$ ,  $\eta^2 = .024$ . Plotting this interaction (see Fig. 1) shows that this is true for older men (38 years and older). Whereas watching edutainment TV cooking shows does not affect younger men's (under 38 years) cooking, older men seem to cook more often when they watch these shows more often.

### 3.3. Watching educational and edutainment TV cooking shows and eating habits: meal types

#### 3.3.1. Female participants

The results of the MANOVA analyses on the consumption of various meal types among the female participants show a significant main effect of age,  $F(3,418) = 8.17$ ,  $p < .001$ ,  $\eta^2 = .055$ . The parameter estimates of these results show that compared to older



**Fig. 1.** Plotting the interaction between age and the consumption of edutainment TV cooking shows on men's cooking frequency ( $N = 377$ ).

women, younger women consume more ready-made meals,  $B = -.02$ ,  $S.E. = .01$ ,  $p < .01$ ,  $\eta^2 = .02$ , and more fast food,  $B = -.03$ ,  $S.E. = .01$ ,  $p < .001$ ,  $\eta^2 = .048$ . No significant association appeared between the consumption of specific meal types and watching an educational TV cooking show,  $F(3, 418) = .07$ ,  $p = .97$ ,  $\eta^2 = .001$ , or watching an edutainment TV cooking show,  $F(3, 418) = .05$ ,  $p = .98$ ,  $\eta^2 = .000$ . The results also show no significant interaction effect between age and watching an educational TV cooking show,  $F(3, 418) = .81$ ,  $p = .49$ ,  $\eta^2 = .006$ , or between age and watching an edutainment TV cooking show,  $F(3, 418) = .23$ ,  $p = .88$ ,  $\eta^2 = .002$ .

### 3.3.2. Male participants

The results of the MANOVA analyses on the consumption of various meal types among the male participants show no significant main effect of age,  $F(3, 359) = 1.77$ ,  $p = .15$ ,  $\eta^2 = .015$ , and no significant association between the consumption of specific meal types and watching an educational TV cooking show,  $F(3, 359) = .53$ ,  $p = .67$ ,  $\eta^2 = .004$ , or watching an edutainment TV cooking show,  $F(3, 359) = .66$ ,  $p = .58$ ,  $\eta^2 = .005$ . Again, the results show no significant association between age and watching an educational TV cooking show,  $F(3, 359) = .44$ ,  $p = .73$ ,  $\eta^2 = .004$ , or between age and watching an edutainment TV cooking show,  $F(3, 359) = .68$ ,  $p = .57$ ,  $\eta^2 = .006$ .

## 3.4. Watching educational and edutainment TV cooking shows and eating habits: food groups

### 3.4.1. Female participants

The results of the MANOVA analyses on the consumption of healthy and unhealthy foods among the female participants show a significant main effect of age,  $F(4, 416) = 5.80$ ,  $p < .001$ ,  $\eta^2 = .053$ . Parameter estimates of the significant results show that compared to older women, younger women consume fewer vegetables,  $B = .02$ ,  $S.E. = .01$ ,  $p < .05$ ,  $\eta^2 = .015$ , more salty snacks,  $B = -.03$ ,  $S.E. = .01$ ,  $p < .001$ ,  $\eta^2 = .038$ , and more sweet snacks,  $B = -.02$ ,  $S.E. = .01$ ,  $p < .05$ ,  $\eta^2 = .009$ . Further, watching an educational TV cooking show significantly corresponds to women's intake of healthy and unhealthy foods: the more frequently women watch an educational TV cooking show, the less likely they are to consume sweet snacks,  $B = -.45$ ,  $S.E. = .14$ ,  $p = .001$ ,  $\eta^2 = .025$ . Watching an edutainment TV cooking show did not correspond significantly to the intake of healthy and unhealthy foods,  $F(4, 416) = 1.33$ ,  $p = .26$ ,  $\eta^2 = .013$ . Finally, no significant interaction effect emerged for age and watching an edutainment TV cooking show and the consumption of healthy and unhealthy foods,  $F(4, 416) = 1.05$ ,  $p = .38$ ,  $\eta^2 = .010$ . However, a significant interaction effect emerged for age and watching an educational TV cooking show and the consumption healthy and unhealthy foods,  $F(4, 416) = 2.96$ ,  $p < .05$ ,

$\eta^2 = .028$ . The parameter estimates of the significant results show that controlling for age, the more frequently women watch an educational TV cooking show, the more likely they are to consume sweet snacks,  $B = -.01$ ,  $S.E. = .003$ ,  $p = .001$ ,  $\eta^2 = .024$ . Plotting this interaction (see Fig. 2) shows that among those who less frequently watch educational TV cooking shows, younger women tend to consume more sweet snacks compared to older women. However, among those who frequently watch educational TV cooking shows, the relationship reverses, and older women consume more sweet snacks compared to younger women.

### 3.4.2. Male participants

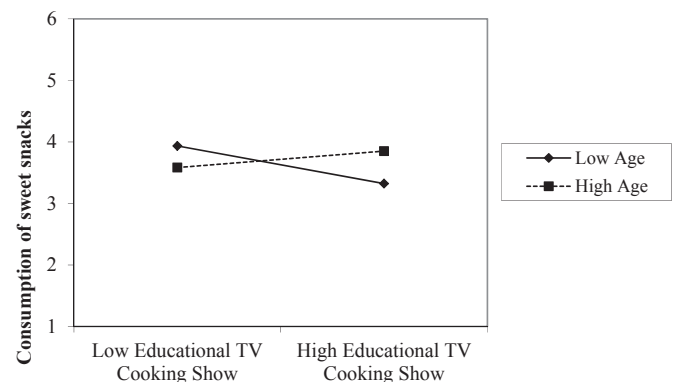
The results of the MANOVA analyses on the eating habits of the male participants show no significant main effect for age on the consumption of healthy or unhealthy foods,  $F(4, 359) = 2.08$ ,  $p < .08$ ,  $\eta^2 = .023$ . No significant correspondence was found between the intake of healthy and unhealthy foods and watching an educational TV cooking show,  $F(4, 359) = .24$ ,  $p = .92$ ,  $\eta^2 = .003$ , or watching an edutainment TV cooking show,  $F(4, 359) = .83$ ,  $p = .51$ ,  $\eta^2 = .009$ . The results of the interaction effects also show no significant association between the consumption of healthy and unhealthy foods and age and watching an educational TV cooking show,  $F(4, 359) = .44$ ,  $p = .78$ ,  $\eta^2 = .005$ , or between age and watching an edutainment TV cooking show,  $F(4, 359) = .55$ ,  $p = .70$ ,  $\eta^2 = .006$ .

## 4. Discussion

The general aim of this study was to explore whether and how an educational TV cooking show and an edutainment TV cooking show relate to the cooking and eating habits of their viewers. First and foremost, the results of this study indicate that the audiences of a popular educational TV cooking show and a popular edutainment TV cooking show do not overlap, which may be relevant to future research in this area.

### 4.1. TV cooking shows and the cooking habits of male and female viewers

The results of our study show that for female viewers, no association can be found between their consumption of TV cooking shows and their own cooking behavior. Compared to men, women in this study cook more often, and the older the women in this sample more frequently cooked meals. Previous studies have carefully outlined the dominant role of women in food planning and preparation (e.g., Charles & Kerr, 1988; DeVault, 1994; Murcott, 1982) as well as the crucial role of mothers (Caraher et al., 2000) and maternal grandmothers (De Backer, 2013; Johnson, Sharkey,



**Fig. 2.** Plotting the interaction between age and the consumption of educational TV cooking shows on women's consumption of sweet snacks ( $N = 425$ ).

McIntosh, & Dean, 2010) in passing on knowledge and skills. Caraher et al. (2000) did remark that although TV cooking shows are of little importance in women's initial learning of cooking skills, these shows do seem to become more important sources of knowledge later in life. In contrast, this study shows that the cooking habits of both younger and older women are unrelated to watching TV cooking shows. Of course, the design of this study only allows us to discuss correlations between the consumption of TV cooking shows and the off-screen cooking habits of their viewers. Further, we should note that watching cooking shows may not be associated with women's cooking behavior because the shows we have selected for the current study are both hosted by men (a male chef in the educational show and a male voice-over in the edutainment show), and it is possible that watching shows with a female chef would lead to different results. Future research should investigate this issue.

Next, turning to the male participants, the results first show that men watch TV cooking shows as often as women. In the United States, the Food Network originally targeted only female viewers and began to target male viewers later on (Nathanson, 2009). Our results confirm the importance of focusing on male audiences as well. Perhaps the most important finding of this study is that men's cooking is associated with the consumption of TV cooking shows. Younger men's cooking in this sample is associated with watching the educational TV cooking show, and both the educational and the edutainment TV cooking shows are correlated to older men's cooking in this sample. The edutainment TV cooking show used as a case study, *Komen Eten*, entails a strong competitive element; participants of these shows are eager to win and show off their competitive skills (Ahmed, 2011). Off-screen, men also see cooking as an opportunity to demonstrate competence and skills (Meah & Jackson, 2013), which may explain why this edutainment show correlates with men's cooking in this sample. However, this does not explain why the correlation appears for older men but not younger men. One possible explanation may be that *Come Dine with Me* is suitably instructive to those who can already cook. Another explanation may be that young men are less concerned with cooking compared to older men and that young adults are among the key groups that eat out and consume fast food (Lachat et al., 2012). However, this study provides no evidence to support these assumptions.

#### 4.2. TV cooking shows and the eating habits of male and female viewers

Watching TV cooking shows is not associated with women's or men's consumption of fast food, home-cooked meals or ready-made meals in our sample. In addition, watching TV cooking shows is not associated with the intake of vegetables, fruits, and snacks. A potential explanation for the results regarding home cooking and the intake of fruit and vegetables in this sample may be that the recipes on the TV cooking shows used as case studies are not healthier than average ready-made meals. No data exist on the nutritional value of these shows, but a few other studies have shown that the meals prepared on TV cooking shows score poorly when compared to the WHO healthy food intake recommendations (see Howard, Adams, & White, 2012; Jones, Freeth, Hennessy-Priest, & Costa, 2013). Most often, the recipes of TV cooking shows contain excessive amounts of saturated fat, sodium, and energy (Silva, Di Bonaventura, Byrnes, & Herbold, 2010).

Moreover, the only significant association between watching TV cooking shows and eating habits in this sample was that watching an educational TV cooking show corresponds positively to women's consumption of sweet snacks. Among those who watched the educational TV cooking show less often, younger women appeared

to snack more compared to older women, which is also supported by a significant main effect of age on the consumption of sweet snacks. However, among those who watch educational TV cooking shows a great deal, older women appear to eat more sweet snacks, and their consumption is higher compared to younger women. Again, because of the design of this study, it cannot be concluded that educational TV cooking shows cause older women to consume more sweet snacks. We can only make note of an association. Perhaps those who snack more often are the ones who watch educational TV cooking shows more often. Still, it is worth exploring this issue further, especially keeping in mind that Bodenlos and Wormuth (2013) found that more sweet snacks were consumed among individuals who watched a TV cooking show compared to those who watched the nature program. The majority (more than 70%) of their sample were young women aged between 18 and 22, but no details were given about the format of the TV show used in that study. Based on the outcomes of this and their study, it will be interesting to replicate Bodenlos and Wormuth (2013) study with a larger sample of younger and older women and men and make a distinction between watching an educational versus an edutainment TV cooking show.

## 5. Conclusions and limitations

The present study is subject to several limitations. First, as mentioned earlier, survey research does not allow for drawing any conclusions about the causality of relationships. It will be interesting to investigate the causality of associations found in this study by means of intervention studies. Second, self-report measures were used, and such measures may be subject to response distortions (e.g., extreme- or central-tendency responding or socially desirable responding), which inflate the associations between the independent and outcome variables (Podsakoff, MacKenzie, & Podsakoff, 2012). It has been argued that retrospective self-report measures of food behavior are reliable (Unusan, 2006), but a cross-check with intervention studies would strengthen the results of this study.

This study relied on a convenience sample, so generalizations of these results cannot be made. Moreover, it may be the case that multiple members from the same household took part in this study. In future studies, it will be important to take this into account. Further, other demographic factors may affect the relationship between watching TV cooking shows and cooking and eating behaviors. One important factor may be socio-economic status. Although the study contains data on the educational degrees and work and living situations of the respondents, we were not able to include these data in the analyses as additional factors due to the limited sample size. One must be attentive to the fact that these factors may partly explain the effects of age on the relationship between watching cooking shows and cooking behavior. In addition, approximately 40% of our sample were students, and this could have biased the results because not all students have access to a kitchen. Conversely, students may be especially keen on cooking because they often share a kitchen and can easily cook together. Future research should investigate whether and how these factors (educational degree, income, household status, etc.) influence the results via a more controlled study (i.e., specifically examining a sample of men between the ages of 30 and 45 with similar households/incomes/educational degrees to better determine whether viewing cooking shows changes behavior).

In addition, future studies should include a more diverse and larger range of cooking shows because the specifics of the selected cooking shows (e.g., a male chef in the educational show and a male voice-over in the edutainment show) may have affected the results. Including a wide range of shows would also rule out an alternative



explanation for the lack of audience overlap between both shows because the educational cooking show airs earlier (6:15 p.m.) than the edutainment cooking show (8:15 p.m.). An individual's working hours could restrict his or her access to one of the shows. However, for the majority of Flemish people, a regular working day begins at 9 a.m. and ends at 5 p.m., which would allow them to watch both shows, and modern technology allows TV viewers to watch shows on demand.

In sum, this study investigated the association between watching an educational versus an edutainment TV cooking show and eating/cooking habits among a sample of Belgian adults. Watching TV cooking shows seems to be marginally associated with the food intake patterns of their viewers. Women, especially older women, in this sample tend to consume more sweet snacks the more they watch educational TV cooking shows. However, no other correlations with food intake patterns appear. For the women in this sample, educational and edutainment TV cooking shows also appear to be unrelated to their cooking behavior. For men, however, an association between TV cooking shows and their cooking habits was found. First, for men of all ages in this sample, watching an educational TV cooking show corresponded positively with their own cooking behavior. In addition, older men in this sample also appeared to cook more often the more they watched an edutainment TV cooking show.

## References

- Ahmed, A. M. (2011). Women are not always less competitive than men: evidence from come dine with Me. *Applied Economics Letters*, 18(12), 1099–1101.
- Baker, A. H., & Wardle, J. (2003). Sex differences in fruit and vegetable intake in older adults. *Appetite*, 40(3), 269–275.
- Beck, M. E. (2007). Dinner preparation in the modern United States. *British Food Journal*, 109(7), 531–547.
- Blass, E. M., Anderson, D. R., Kirkorian, H. L., Pempek, T. A., Price, I., & Koleini, M. F. (2006). On the road to obesity: television viewing increases intake of high-density foods. *Physiology & Behavior*, 88(4), 597–604.
- Bodenlos, J. S., & Wormuth, B. M. (2013). Watching a food-related television show and caloric intake. A laboratory study. *Appetite*, 61, 8–12.
- Bonner, F. (2009). Early multi-platforming: television food programmes, cookbooks and other print spin-offs. *Media History*, 15(3), 345–358.
- Caraher, M., Lang, T., & Dixon, P. (2000). The influence of TV and celebrity chefs on public attitudes and behavior among the English public. *Journal for the Study of Food and Society*, 4(1), 27–46.
- Chao, P. S. (1998). TV cook shows—gendered cooking. *Jump Cut*, 42, 19–27.
- Charles, N., & Kerr, M. (1988). *Women, food and families*. Manchester: Manchester University Press.
- CIM (2014). Centre for Information on Media – Belgium, [www.cim.be](http://www.cim.be).
- Clifford, D., Anderson, J., Auld, G., & Champ, J. (2009). Good Grubbin': impact of a TV cooking show for college students living off campus. *Journal of Nutrition Education and Behavior*, 41(3), 194–200.
- Collins, K. (2009). *Watching what we eat: The evolution of television cooking shows*. New York: Continuum.
- Daniels, S., Glorieux, I., Minnen, J., & van Tienoven, T. P. (2012). More than preparing a meal? concerning the meanings of home cooking. *Appetite*, 58(3), 1050–1056.
- De Backer, C. J. S. (2013). Family meal traditions. Comparing reported childhood food habits to current food habits among university students. *Appetite*, 69, 64–70.
- DeVault, M. L. (1994). *Feeding the family: The social organization of caring as gendered work*. University of Chicago Press.
- Devine, C. M., Connors, M. M., Sobal, J., & Bisogni, C. A. (2003). Sandwiching it in: spillover of work onto food choices and family roles in low- and moderate-income urban households. *Social Science & Medicine*, 56(3), 617–630.
- Devine, C. M., Jastran, M., Jabs, J., Wethington, E., Farrell, T. J., & Bisogni, C. A. (2006). "Many sacrifices:" work–family spillover and the food choice coping strategies of low-wage employed parents. *Social Science & Medicine*, 63(10), 2591–2603.
- Dietz, W. H., & Gortmaker, S. L. (1985). Do we fatten our children at the television set? Obesity and television viewing in children and adolescents. *Pediatrics*, 75(5), 807–812.
- Harbridge, L. (2013). A recipe for comedy: come dine with me, incongruity and the observational voice-over. *Comedy Studies*, 4(1), 71–82.
- Higgs, S., & Woodward, M. (2009). Television watching during lunch increases afternoon snack intake of young women. *Appetite*, 52(1), 39–43.
- Hollows, J. (2003). Oliver's twist: leisure, labour and domestic masculinity in the naked chef. *International Journal of Cultural Studies*, 6(2), 229–248.
- Hollows, J. (2007). The feminist and the cook: Julia child, Betty Friedan and domestic femininity. In L. Martens, & E. Casey (Eds.), *Gender and consumption: domestic cultures and the commercialisation of everyday life* (pp. 33–48). Aldershot Hampshire UK: Ashgate.
- Howard, S., Adams, J., & White, M. (2012). Nutritional content of supermarket ready meals and recipes by television chefs in the United Kingdom: cross sectional study. *BMJ: British Medical Journal*, 345, e7607.
- Johnson, C. M., Sharkey, J. R., McIntosh, A. W., & Dean, W. R. (2010). "I'm the Momma": using photo-elicitation to understand matrilineal influence on family food choice. *BMC Women's Health*, 10, 21.
- Jones, M., Freeth, E. C., Hennessy-Priest, K., & Costa, R. J. (2013). A systematic cross-sectional analysis of British based celebrity chefs' recipes: is there cause for public health concern? *Food and Public Health*, 3(2), 100–110.
- Kaufman, J. C. (2010). *The meaning of cooking*. Malden, MA: Polity Press.
- Ketchum, C. (2005). The essence of cooking shows: how the food network constructs consumer fantasies. *Journal of Communication Inquiry*, 29(3), 217–234.
- Lachat, C., Nago, E., Verstraeten, R., Roberfroid, D., Van Camp, J., & Kolsteren, P. (2012). Eating out of home and its association with dietary intake: a systematic review of the evidence. *Obesity Reviews*, 13(4), 329–346.
- Lang, T., & Caraher, M. (2001). Is there a culinary skills transition? data and debate from the UK about changes in cooking culture. *Journal of the HEIA*, 8(2), 2–14.
- Meah, A., & Jackson, P. (2013). Crowded kitchens: the 'democratisation' of domesticity? *Gender, Place & Culture*, 20(5), 578–596.
- Moser, A. (2010). Food preparation patterns in German family households. An econometric approach with time budget data. *Appetite*, 55(1), 99–107.
- Murcott, A. (1982). On the social significance of the cooked dinner in South-Wales. *Social Science Information Sur les Sciences Sociales*, 21(4–5), 677–696.
- Nathanson, E. (2009). As easy as pie: cooking shows, domestic efficiency, and postfeminist temporality. *Television & New Media*, 10(4), 311–330.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63, 539–569.
- Rey-Lopez, J. P., Vicente-Rodriguez, G., Répásy, J., Mesana, M. I., Ruiz, J. R., Ortega, F. B., ... Moreno, L. A. (2011). Food and drink intake during television viewing in adolescents: the healthy lifestyle in europe by nutrition in adolescence (HELENA) study. *Public Health Nutrition*, 14(9), 1563–1569.
- Robinson, T. N. (1999). Reducing children's television viewing to prevent obesity: a randomized controlled trial. *Jama*, 282(16), 1561–1567.
- Rousseau, S. (2012). *Food media: Celebrity chefs and the politics of everyday interference*. London: Berg.
- Sellaeg, K., & Chapman, G. E. (2008). Masculinity and food ideals of men who live alone. *Appetite*, 51(1), 120–128.
- Silva, N., Di Bonaventura, E., Byrnes, C., & Herbold, N. (2010). Are 30-Minute cooking shows on the food network an option for dietitians to recommend during counseling? *Topics in Clinical Nutrition*, 25(1), 70–74.
- de Solier, I. (2005). TV dinners: culinary television, education and distinction. *Continuum: Journal of Media & Cultural Studies*, 19(4), 465–481.
- Strange, N. (1998). Perform, educate, entertain: ingredients of the cookery programme genre. In C. Geraghty, & D. Lusted (Eds.), *The television studies book* (pp. 301–312). London: Edward Arnold.
- Unusan, N. (2006). University students' food preference and practice now and during childhood. *Food quality and preference*, 17(5), 362–368.
- Warde, A., & Hetherington, K. (1994). English households and routine food practices: a research note. *The Sociological Review*, 42(4), 758–778.
- Wardle, J., Haase, A. M., Steptoe, A., Nillapun, M., Jonwtiwiwes, K., & Bellis, F. (2004). Gender differences in food choice: the contribution of health beliefs and dieting. *Annals of Behavioral Medicine*, 27(2), 107–116.
- Widart, A. (2005). *Kookprogramma's in evolutie: Inhoudsanalyse van de kookprogramma's uitgezonden op de Vlaamse en Waalse openbare zender van 1958 tot 2000*. Brussel: VUB.