



## A mixed methods evaluation of televised health promotion advertisements targeted at older adults

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### ABSTRACT

The purpose of this research was to evaluate television advertisements targeted at 55–70-year olds that promoted physical activity and fruit and vegetable consumption. Awareness of the campaign, perceived credibility of the source, intentions to visit a promoted website, and intentions to perform the healthy behaviors were evaluated using mixed methods research. Results from a population level survey ( $n = 1600$ ) showed low unprompted and prompted awareness of the campaign and no differences in intentions or behaviors among those who were aware of the campaign. Unprompted recall resulted in a very wide range of responses including the citation of many commercial advertisers. Qualitative themes that emerged from the focus groups included neutral, positive, and negative comments about the advertisements, source credibility, website considerations specific to seniors, and suggestions about appropriate advertising for older adults. This research showed that the increased attention paid to the advertisements was due in a large part to negative reactions to the character used in the advertisements. Another important finding was the government was not considered to be a credible source of health information. Finally, health promoters should be cautious about websites as the primary source of information, particularly for older adults.

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## 1. Background

Modifiable lifestyle factors such as consuming a diet that includes fruits and vegetables, whole grains, and is low in saturated fat and added sugars can improve health (US Department of Health, 2000). Eating Well with Canada's Food Guide (Health Canada, 2007) also recommends that adults over the age of 50 consume seven servings of fruits and vegetables and seven servings of grains per day; yet on a daily basis, only 59% of men and 52% of women between the ages of 51 and 70 years consume at least five servings of fruits and vegetables (Statistics Canada, 2007). In addition to a healthy diet, physical activity is an important factor in achieving and maintaining health. Physical inactivity is a modifiable risk factor for cardiovascular disease as well as a number of other negative health outcomes (Warburton, Nicol, & Bredin, 2006). Diseases of the circulatory system are much more prevalent in seniors but these can be improved with physical

activity (Taylor et al., 2004). Taylor et al. also provide compelling evidence for the positive role that physical activity can play in bone health and falls prevention in seniors. Although population levels of leisure-time physical activity were on the rise in Canada in the 1980s and 1990s (Craig, Russell, Cameron, & Bauman, 2004), seniors continue to be among the least active, with 50% of men and 65% of women over the age of 65 years classified as inactive (Canadian Fitness and Lifestyle Research Institute, 2005). It is clear that improving diets and increasing levels of physical activity can have a positive influence on the health of seniors.

### 1.1. Evaluation of mass market campaigns

One approach used to counter trends in physical inactivity and poor diet is mass marketing campaigns, which can include everything from traditional media such as television and radio announcements through the use of newer channels such as wireless devices and the Internet (Bauman, Smith, Maibach, & Reger-Nash, 2006). Whatever the medium, the goal of mass market health promotion campaigns is to increase the amount of information available on a health topic (Randolph & Viswanth, 2004). Given this informational goal, Bauman et al. (2006) advocate the use of the Hierarchy of Evaluation Framework which

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was developed out of previous research in advertising and health promotion literature (e.g., Flay, 1987). This framework outlines steps to take when evaluating the impact of physical activity media campaigns. The first step is to establish if there are proximal (immediate) effects, such as awareness of the campaign which should be established by asking unprompted recall questions followed by prompted recall and understanding of the message. At the next, more distal level, cognitive mediator variables such as beliefs regarding the behavior, and changes in attitudes or intentions as a result of the message should be assessed. Finally, at the most distal (end point) level the interest is in whether a change in behavior has occurred as a result of the media campaign. This type of framework has been used to examine an Australian mass media physical activity campaign (Bauman, Bellew, Owen, & Vita, 2001) and the uptake of Canada's Physical Activity Guide (Cameron, Craig, Bull, & Bauman, 2007).

Few examples of evaluated mass media campaigns targeted at seniors have been published. One campaign evaluated was *Wheeling Walks* which included 170 television, radio and newspaper advertisements aimed at 50–65-year olds in Wheeling, Virginia. Evaluation results using a Hierarchy of Evaluation Framework found that 76% of respondents reported recalling the television advertisements, compared to 32% recall for the radio advertisements and 5% for public health education programs held in churches and worksites (Reger et al., 2002). This indicates television is an important media to use when conducting health promotion campaigns with seniors. However, even within this demographic group, further subpopulations should be considered. For example, a Dutch television program aimed at increasing physical activity among seniors was most popular with older women who already had some knowledge of the benefits of physical activity and who reported few barriers to participation (Hopman-Rock, Borghouts, & Leurs, 2005). Yet, when compared to the overall population, even television campaigns aimed at seniors may not be reaching a majority of the target audience. In a campaign aimed at the general population, BBC's *Fighting Fat, Fighting Fit Campaign*, adults aged 65 years and over had the lowest levels of awareness, recollection of having seen a television ad, and lowest recall of a healthy eating (10.9%) or physical activity (7.3%) message within the campaign compared to any other age group (Wardle, Rapoport, Miles, Afuape, & Duman, 2001).

### 1.2. Commercial advertising

It is also important to recognize that health promotion marketing campaigns exist in an environment that is competitive with, if not hostile to, their message (Randolph & Viswanth, 2004). Indeed, seniors rely on physicians and television for nutrition information, particularly if the seniors are of low income (Mckay, Houser, Blumberg, & Goldberg, 2006). However, the quality of information from television is inconsistent and the messages are further confused by the influence of commercial advertisements (Mckay et al., 2006). Similarly, residents of the province of Alberta, Canada, reported nutrition and physical activity information available in the media was contradictory and confusing (Criterion Research Corp, 2002). Thus, an assessment of the wider media environment would be a valuable addition to the evaluation of a mass media health promotion campaign because the competition presented by commercial sources may influence the recall of health promotion campaigns.

### 1.3. Health promotion websites

Websites and other Internet applications contribute to an expanding media environment. Websites provide health promoters with powerful, flexible, and inexpensive communication tools,

however research evaluating the effectiveness of such technologies is limited (Abroms & Maibach, 2008). One aspect that should be considered is the demographic characteristics of Internet users such as the age of users. According to Statistics Canada (2005), 52.4% of Canadian adults aged 55–64 years use the Internet from home; whereas for those over the age of 65 the proportion drops to 22.7%. Similarly, Flynn, Smith, and Freese (2006) reported that one-third of participants aged 63–66 had used the Internet to search for health information. These authors also reported that women were 1.23 times as likely to seek health information on the Internet and those who said they “worked hard to keep healthy” were 1.17 times as likely to do so. Other researchers have reported that only 15% of those over 65 years reported using the Internet to find health-related information, compared to 43% of those aged 18–35 years (Bansil et al., 2006). Because seniors are less likely to access the information for health information, it is necessary to examine whether seniors access websites promoted in mass media campaigns.

### 1.4. Source credibility

Whatever the medium used to disseminate health information, one variable that can influence the success of a mass media campaign is the perceived trustworthiness or credibility of the source of information. For example, exercise promotion messages presented by a noncredible source resulted in little further consideration of the message, therefore limiting the potential influence of the message (Jones, Sinclair, & Courneya, 2003). Other researchers found that a highly credible source of exercise information (the American Heart Association) positively influenced attitudes and intentions toward exercise behavior (Arora, Stoner, & Arora, 2006). Similarly, citing a non-governmental cancer council as the source improved the success of a sun protection campaign (Smith, Bauman, McKenzie, & Thomas, 2005). The accuracy of source identification is also potentially important as it has been found that incorrectly attributing the source of anti-smoking advertisements from the correct government source to commercial companies resulted in increased comprehension of the message and subsequent intentions to quit smoking (Hassan, Walsh, Shiu, Hastings, & Harris, 2007).

### 1.5. Purpose and research questions

There is not enough evidence to support the effectiveness of mass media campaigns and evaluations of such campaigns are recommended (Kahn et al., 2002). Further, few evaluations have been conducted of senior-specific programs and the access of health promotion websites. Therefore, the purpose of this research was to evaluate television advertisements targeted at 55–70-year olds using mixed methods and the Hierarchy of Evaluation as a guiding framework. The advertisements promoted fruit and vegetable consumption and physical activity. The research questions addressed (and the methods used) were as follows:

1. What is the campaign awareness, source of the advertisement, beliefs regarding either physical activity or healthy eating, intentions to visit a promoted website and intentions to perform the healthy behaviors (telephone survey)?
2. What physical activity and health eating advertisements are recalled by participants in general and therefore may represent competition for health promotion programs (answers to the unprompted recall survey question)?
3. What were the positive and negative aspects of the advertisements, the perceived credibility of the source of the advertisements, and the usefulness of promoting a website (focus groups). The goal of the focus groups was to examine the

advertisements in greater depth and to triangulate these results with the survey results to get a better understanding of the reasons the advertisements were or were not successful.

## 2. Method

### 2.1. Campaign description

In 2001 the Premier's Advisory Council on Health (Alberta) advocated that "the best long-term strategy for sustaining the health system is to encourage people to stay healthy" (p. 5) and further recommended that better information be provided to help Albertans stay healthy. The Alberta government developed an action plan in early 2002 and the *Healthy U* website ([www.healthyalberta.com](http://www.healthyalberta.com)) was launched later that year. The goals of the program were, and continue to be, to increase the number of Albertans who are physically active and to increase the number of Albertans who eat at least five to ten servings of fruits and vegetables per day<sup>1</sup>.

Prior to the launch of the website, a baseline survey of 1600 people established that 90% of Albertans believed they had enough information about physical activity to achieve and maintain physical fitness. However, 55% of respondents felt that information regarding physical activity was often contradictory (Criterion Research Corp, 2002). Although 58% of Albertans reported they had enough information about healthy eating, 75% felt that the information was often contradictory. After the initial program launch, another survey ( $n = 1600$ ) showed that although 15% of people surveyed were aware of the website only 4% had visited the site. Six percent of participants identified (without being prompted), a *Healthy Alberta* slogan (Criterion Research Corp, 2003). Overall, there was high awareness for healthy living advertising and this reflected the large number of such messages available in the media. However, it appears that the numerous advertisements resulted in mixed messages and subsequent confusion among Albertans.

Since 2003, there have been multiple initiatives bearing the *Healthy U* brand but evaluations of such campaigns have been at a general population level with little research into targeted populations (personal communication, March 8, 2007). In October 2007, the *Healthy U* program launched a television advertising campaign targeted at adults aged 55–70 years. The television campaign ran for eight weeks and included two advertisements, one that encouraged consumption of fruits and vegetables and one focused on increasing physical activity within the target population. The advertisements featured a comical "grim reaper" character who, while trying to approach his target, either slipped on a banana peel allowing a woman to walk away (healthy eating advertisement) or was knocked out by a baseball allowing some older men to continue with their game (physical activity advertisement). As with all *Healthy U* campaigns, the messages centred on small changes and a balanced life and a feature of the advertisements was to encourage viewers to go to the *Healthy U* website for more healthy eating and physical activity "tips".

All the advertisements were shown for eight weeks on the local affiliate of a national, privately owned, television company. The average weekly gross rating points (GRPs) were 110. GRPs are the product of reach and frequency where reach is the percentage of a given demographic group that has the opportunity to see a given advertisement through exposure and frequency is the number of times individuals have an opportunity to see a given advertisement. One GRP indicates that 1% of the target audience had the opportunity to see an advertisement. Thus, a GRP of 110 in one

week would suggest that, on average, a person in the target audience had the opportunity to view the ads about once in that week. There were also health tips offered during the news (30 s) with average GRPs of 67.25 and news billboards (5 s) with average GRPs of 15.5.

#### 2.1.1. Research design

The evaluation used a mixed methods approach that included both a population level telephone survey and focus groups. All aspects of the research received institutional ethics approval and all participants gave informed consent prior to participation. The survey started immediately following the end of the campaign and provided a cross-sectional examination of uptake of the senior-specific campaign. The focus groups took place a few months after the end of the campaign and allowed for a deeper exploration of perceptions of the campaign advertisements and considerations of advertising in general. Mixed methods research can overcome the limitations presented by the two most popular methods used in such research, surveys and focus groups (Grier & Bryant, 2005). These authors contend that focus groups are limited because what people discuss in a group setting are not those that generally have the greatest impact on their health behavior decisions. Conversely, survey data are limited because important insights into deeper issues can be lost. Thus, by using both types of data collection, a richer sense of campaign impacts can be obtained. Because we were interested in a broad range of perspectives and were testing specific health promotion materials, these fit Coreil's criteria for conducting a focus group (see Green, 2004). Green further argues that focus groups are very useful when the goal of the research is to test the suitability of health promotion materials for the target audience, which is precisely what we did.

#### 2.1.2. Survey participants

One thousand six hundred Albertans participated in the study with an oversampling of individuals older than 55 as they were the target audience for the advertisements. Participants older than 55 comprised 45.1% of the total sample [ $n = 721$ ]. The overall response rate (completed surveys divided by the sum of completed surveys, refusals [ $n = 1543$ ], incompletes [ $n = 8$ ], language problems [ $n = 130$ ], and callbacks [ $n = 176$ ]) was 46.3%.

#### 2.1.3. Survey measures

The survey was modeled on Bauman et al. (2006) recommendations for the evaluation of a mass media campaign and consisted of a random digit dialing protocol survey that included demographic information. As such, the survey followed the following format:

1. Gender and age were collected first to ensure that quotas were met.
2. Level 1 of hierarchy of evaluation framework:
  - Unprompted recall (one question for each behavior): Have you seen any television advertising about healthy eating (physical activity) in the last two months (yes/no)? If yes, can you name any of them (open ended)? (Bauman et al., 2001).
  - Prompted recall (one question for each behavior): Do you remember seeing any "Healthy U" advertisements on TV about (eating a healthy diet) being physically active (Bauman et al., 2001)? If yes: Do you remember if this advertisement prompted you to go to the Healthy U website (yes/no)? How likely are to go to the website (scored on an 11-point scale ranging from "0%" to "100%")? What organization sponsored the advertisements (open ended; Smith et al., 2005)?
3. Level 2 of hierarchy of evaluation framework:
  - Physical activity beliefs (two questions per behavior): For me, regular physical activity (eating a healthy diet) will keep me

<sup>1</sup> It should be noted that the food guide has been recently revised (after the time of data collection) and the recommended minimum number of servings for this age group is now 7 servings/day (Health Canada, 2007).

healthy. For me, regular physical activity (eating a healthy diet) will reduce my chances of getting serious health problems. Both statements scored on a 5-point scale ranging from 1 = “not at all important” through 5 = “very important” (Plotnikoff, McCargar, Wilson, & Loucaides, 2005).

- Intentions (one question for each behavior): How likely is it that you will eat the recommended daily number of fruits and vegetables regularly (get regular (3×/week) physical activity) over the next month (scored on an 11-point scale ranging from “0%” to “100%”; Plotnikoff et al., 2005).
4. Level 3 of hierarchy of evaluation framework:
- Physical activity behavior was measured using the validated Godin Leisure Time Exercise Questionnaire (GLTEQ; Godin & Shephard, 1985) that asks participants how often they engaged in mild, moderate, and strenuous exercise for more than 15 min in an average week.
  - Fruits and vegetables intake was measured with the fruits and vegetables module of the Canadian Community Health Survey (Statistics Canada, 2006).
5. Other demographics were collected in this order: employment, self-rated health (one question: How would you rate your health? Scored on a 5-point scale ranging from 1 = “excellent” through 5 = “poor”), education, and income.

The entire survey required approximately 8–9 min to complete.

#### 2.1.4. Survey data analysis

Survey data were analyzed using simple descriptive statistics to determine awareness of the campaign and recall of specific messages. Weekly leisure-time physical activity (LTPA) was calculated from the GLTEQ as the sum of the weighted minutes of mild, moderate and strenuous activity by associated MET values of 3, 5, and 9, respectively. Participants were considered sufficiently physically active based on a MET cutoff score of at least 35 METs per week for women and at least 38 METs per week for men. As explained by Garcia Bengoechea, Spence, and McGannon (2005), these cutoff values equal 300–400 MET-min/day, which is equivalent to a weekly energy expenditure of 2000 kcal. An energy expenditure of 2000 kcal or more per week is associated with a reduced risk of heart disease (Paffenbarger, Wing, & Hyde, 1978).

Two logistic regressions (one for physical activity and one for healthy eating) with odds ratios were calculated to determine the unique contributions of participant characteristics (age, gender, SES, education, activity level or fruits and vegetable consumption) on campaign awareness. Social cognitive variables (self-rated health, beliefs, and intentions) were included in the second step to determine the unique contributions of these variables in predicting the likelihood of prompted recall of the advertisements when controlling for the demographic variables. Following the findings of Hassan et al. (2007), two additional analyses of variance (ANOVA) were conducted to determine if misattribution of the source of the physical activity or healthy eating advertisements, from the Government of Alberta, to other sources had an effect on intentions.

#### 2.1.5. Unprompted recall – open-ended responses – analysis

The responses to the two unprompted recall questions were very wide-ranging and data were initially categorized by one research assistant in consultation with the principal investigator. This process generated 25 codes for the healthy eating question and 22 codes for the physical activity question. At this stage a second research assistant was provided a sample of 25% of the responses from each question to test for inter-rater reliability. Because of the large number of codes there was not a perfect match between raters (i.e., some codes were not used by both raters) therefore kappa values could not be computed. However, Spearman correlations of the ratings were .83 for the physical activity

ratings and .68 for the healthy eating ratings. The codes were then collapsed into the broader physical activity categories of publicly funded physical activity (e.g., *Healthy U*, *ParticipACTION*), commercial physical activity (e.g., Bowflex), general reference to physical activity (e.g., people walking), other (e.g., cereal with those walk things), not relevant (e.g., *Jenny Craig*), and references to television (e.g., TV show such as *The Biggest Loser*). The broader healthy eating categories were publicly funded healthy eating (e.g., *Heart and Stroke*), commercial healthy eating (e.g., *Kellogg's*, *Subway*), general reference to healthy eating (e.g., teenagers healthy eating), other (e.g., food with a red check mark indicates it is safe), not relevant (e.g., *ParticipACTION*, quit smoking), and references to television (e.g., News programs, *The Biggest Loser*). Table 1 shows the codes and number of cases in each group. The collapsed categories had good inter-rater reliability as defined by Altman (1991) with kappa values of 0.79,  $T(171) = 20.20$ ,  $p < .001$  for the physical activity advertisements and 0.77,  $T(206) = 18.90$ ,  $p < .001$  for the healthy eating responses.

#### 2.1.6. Focus group participants

During March and April of 2008, four focus group interviews were conducted in separate locations in the northern region of Alberta, Canada. To initiate recruitment, an older adult wellness coordinator familiar to the first and second authors was approached and asked to provide contact information of professionals known to work with older adults in northern Alberta. We also accessed publically available listings of older adult recreational centres in Alberta and approached a total of eight facilities. Representatives from four facilities expressed interest in the study and recruited members of their facilities by describing the research and asking if they would like to participate in the focus groups. In this way, 29 community-dwelling participants (21 females and 8 males) were recruited for participation. Each mixed gender focus group consisted of six to eight participants aged 55 to over 80 years (some participants did not specify their age except to say they were over 80). Two focus groups were conducted in a large urban city and two were conducted in rural towns. Two focus groups were held at senior facilities (senior's drop-in centre and senior's club) and two were held at facilities serving the local community at-large.

#### 2.1.7. Focus group interview guide

The focus groups were conducted by a trained researcher using a semi-structured interview guide. To facilitate some initial discussion, and to introduce the topic of physical activity and healthy eating, participants were asked to comment on the benefits they perceive in being physically active or eating a healthy diet. Next, participants were asked general questions about where they usually get information about healthy eating or physical activity and if they remembered any television advertisements from the past that promoted these topics. Participants were then shown the two *Healthy U* advertisements (i.e., physical activity and healthy eating “grim reaper”) with the use of a laptop. Following this viewing, participants were asked to comment on what they thought the advertisements were about, what the purpose of these ads were and to whom these ads were targeted. Next, participants were asked to comment in general about what attracts them to health promotion advertising, if these advertisements were effective in attracting them and if the ads were successful in conveying positive messages about physical activity and healthy eating. Participants were also asked to comment on the credibility of the source of the *Healthy U* advertisements and if they would go to the website featured at the end of the advertisements. Probing questions (e.g., accessibility of the Internet in rural areas) were asked that were specific to the experiences of members in each group. Focus group interviews took between 60 and 90 min to complete. Each were audiotaped with the participants' permission and transcribed verbatim.



**Table 1**

Original open response codes and collapsed categories.

Collapsed physical activity code	PA original codes	<i>n</i>	Collapsed healthy eating code	Healthy eating original codes	<i>n</i>
Publicly funded—promote PA	Publicly funded—promote PA	150	Publically funded	Publically funded promoting healthy eating	77
	Body break <sup>a</sup>	86		Body break	25
	Total	236		Total	102
Commercial PA	Commercial ad—unnamed fitness centre	31	Commercial—healthy eating	Commercial ad promoting low fat foods	10
	Commercial ad—recreation facilities	4		Commercial ad—specific health food label	18
	Commercial ad promoting healthy lifestyle	2		Commercial ad—brand identified food	111
	Commercial ad—named fitness centre	34		Commercial ad—non-brand identified food	118
	Commercial ad—fitness-related apparel	5		Generic commercial ad—food with nutrition claim	12
	Commercial ad—equipment named	72		Commercial ad promoting weight loss program	52
	Commercial ad—equipment not named	77		General ad promoting weight loss and dieting	10
	Commercial ad—fitness-related supplement	1		Commercial ad—Supplement	8
	Commercial ad—use celebrities to promote PA	2		Commercial ad—healthy eating featuring celebrities	3
				Commercial ad—fast food chain	28
Total		228			370
General physical activity	General PA advertisement	161	General	General ad—food category (e.g., trans fats)	87
				General ad—specific disease or health issue	19
				Health and diet general	11
				General ad about healthy food	51
Total		161			168
Other	Other	39	Other	Other	63
	General reference to health lifestyle	3		Grocery store	4
	General ad—healthy eating or obesity	9			
	General—specific health issue	12			
	Total	63		Total	67
Not relevant	Commercial advertisers—nonexercise-related product	21	Not relevant	Commercial ad—fitness equipment	1
	Commercial advertiser—nonfitness-related service	2		Publically funded promoting PA/healthy lifestyle	15
	Commercial ad—weight loss system	10		Tobacco prevention	3
	Total	33		Total	19
Television	TV shows	14	Television	TV stations	14
	News	8		General TV shows	9
	TV stations	19		News	10
	Total	41		Total	40

<sup>a</sup> *Body Break* is a series of Canadian health promotion advertisements that were originally part of the *ParticipACTION* but are now independently produced. Therefore they are not technically publicly funded advertisements but it was decided that this was the most appropriate category for these advertisements.

### 2.1.8. Focus group data analysis

Audiotapes were transcribed verbatim and cross-case analyses (Patton, 2002) were conducted. The principal investigator reviewed each transcript individually and isolated specific meaning units in the raw data to capture critical issues related to the research questions (Maykut & Morehouse, 1994). The central questions from the interview guide were initially used to organize these data (those data obtained in response to the warm-up questions were excluded because they did not specifically relate to the study objectives). Having analyzed each focus group individually, main themes that emerged in all groups were identified. Finally, an inter-rater check was completed to establish the reliability of the coding. To complete this procedure a research assistant (who facilitated the interviews) was provided a random selection of 25% of already coded quotes ( $n = 61$ ) and asked to match these data with the main themes. Overall reliability for the coding of the quotations was calculated using Cohen's kappa. Inter-rater reliability was considered very good (Altman, 1991) with a kappa value of 0.88,  $T(61) = 14.86$ ,  $p < .001$ .

## 3. Results

### 3.1. Survey data

Unprompted recall (i.e., specifically mentioned either *Healthy U* or something about “the grim reaper”) was very poor: 6 (0.4%)

participants recalled the healthy eating advertisement and 8 (0.5%) recalled the physical activity advertisement. An additional two participants answered the physical activity unprompted question with “the one about the grim reaper and the banana peel” which was actually the healthy eating advertisement. Seven participants responded with some variation of the “Government of Alberta” to the physical activity question and seven participants made similar responses to the healthy eating question. However, these were not counted as accurate unprompted recall. Table 2 summarizes the unprompted and prompted recall by demographic group.

Prompted recall was somewhat better: 150 (19.4%) participants recalled the healthy eating *Healthy U* advertisement and 135 (17.4%) participants recalled the physical activity advertisement. Of these participants, 29 recalled the suggestion at the end of the advertisement to go to the *Healthy U* website for more tips on healthy eating and physical activity. Only 8 of these participants were over the age of 55. The likelihood that these 29 participants would go to the website was low with an average score of 5.25 ( $SD = 4.2$ ) with 10 participants giving a 0% likelihood that they would go to the website. No significant differences existed in rated likelihood to go to the website between age groups,  $t(26) = -0.20$ ,  $p > .10$ , or between men ( $n = 8$ ) or women ( $n = 20$ ),  $t(26) = -0.39$ ,  $p > .10$ .

Tables 3 and 4 show the results of the logistic regressions with prompted recall of the physical activity and healthy eating

**Table 2**Summary of unprompted and prompted recall of advertisements by participant characteristics ( $n = 1600$ )<sup>a</sup>.

Demographic factors	<i>n</i>	Unprompted diet	Unprompted PA	Prompted diet	Prompted PA
Gender					
Male	799	2	3	150 (19.4%)	135 (17.4%)
Female	801	1	5	152 (19.9%)	149 (19.3%)
Age group					
18–54	879	1	6	147 (18.8%)	147 (17.1%)
55+	721	5	2	155 (22.5%)	137 (19.9%)
Education					
Less than high school	187	0	0	48 (27.3%)	36 (20%)
High school or technical	306	2	4	170 (22.3%)	150 (19.5%)
University	1104	4	4	84 (14.1%)	98 (16.4%)
Income <sup>b</sup>					
<\$20,000	53	0	0	14 (28.0%)	10 (19.2%)
\$20K–39,999	144	0	0	35 (25.9%)	33 (23.7%)
\$40K–59,999	157	0	2	29 (19.2%)	29 (19.1%)
\$60K–79,999	186	0	2	32 (17.9%)	33 (18.4%)
\$80K–99,999	118	1	0	16 (14.0%)	17 (14.9%)
>\$100,000	471	4	4	82 (17.9%)	77 (16.7%)
Self-rated health					
Excellent	226	1	0	38 (17.3%)	37 (16.7%)
Very good	592	3	4	104 (18.4%)	99 (17.3%)
Good	543	2	2	103 (19.8%)	98 (15.7%)
Fair	191	0	1	48 (25.9%)	42 (22.5%)
Poor	47	0	1	9 (20.5%)	8 (18.2%)
Activity level <sup>c</sup>					
Active	953	6	5	200 (21.8%)	174 (18.8%)
Not active	647	0	3	102 (16.4%)	110 (17.6%)
Fruit and vegetable consumption					
<5 servings/day	876	0	2	170 (20.1%)	144 (17.0%)
5–10 servings/day	619	6	5	116 (19.6%)	120 (20.0%)
>10 servings/day	84	0	1	11 (13.8%)	16 (19.5%)
Total	1600	6 <sup>d</sup> (0.4%)	8 <sup>d</sup> (0.5%)	302 (18.9%)	284 (17.8%)

<sup>a</sup> Some of the totals do not equal 1600 due to missing data.<sup>b</sup> Only 1129 participants reported income.<sup>c</sup> As scored by the GLTEQ.<sup>d</sup> Three of these (all 18–54-year-old, active females) were in both groups.

advertisements, respectively.<sup>2</sup> To summarize the significant results, the regression that examined the physical activity advertisement (model 2, Table 3) showed that participants over the age of 55 were 1.46 times more likely than participants younger than 55 years to recall the *Healthy U* physical activity advertisement when prompted ( $p = .04$ ) and 1.36 times more likely to recall the healthy eating advertisement ( $p = .07$ ). The regression model that examined the healthy eating advertisement and included the social cognitive variables (model 2, Table 4) showed that participants with less than a high school education were more likely to recall the healthy eating advertisement than were participants with completed high school and/or some postsecondary (.39 times,  $p = .001$ ) or completed university (.54 times,  $p = .001$ ).

For the physical activity advertisements, 101 participants named a source of the advertisement. Forty-seven participants correctly attributed the source to the Government of Alberta, while 46 misattributed the source to another government (e.g., federal) or to a not for profit agency (e.g., Canadian cancer society) and 8 participants misattributed the source to a commercial company (e.g., Weight Watchers). The results of the ANOVA showed no

significant effect of the attribution source on intentions,  $F(2, 98) = 2.30$ ,  $p > .05$ . For the healthy eating advertisements, 104 participants named a source of the advertisement. Forty-two participants correctly attributed the source to the Government of Alberta, while 49 misattributed the source to another government (e.g., federal government) or to a not for profit agency (e.g., Canadian cancer society) and 13 participants misattributed the source to a commercial company (e.g., Cheerio's). The results of the ANOVA showed no significant effect of the attribution source on intentions,  $F(2, 101) = 1.33$ ,  $p > .05$ .

### 3.2. Unprompted recall—open-ended responses

For the physical activity question (i.e., name any advertisements seen in the past two months), 1223 responses were received (130 participants gave two responses) of which 461 were “can't remember” which left 762 usable responses. For the similar open-ended healthy eating question, 1317 responses were provided (171 participants gave two responses) of which 551 were “can't remember” leaving 766 usable responses. Fig. 1 shows the frequencies of responses for each of the collapsed physical activity categories and Fig. 2 shows the frequency of responses for each of the collapsed healthy eating categories.

### 3.3. Focus group data

Themes emerged under the general categories of comments regarding the grim reaper advertisements, source credibility, and

<sup>2</sup> These regressions report on an  $N$  of 1093 because many participants did not give income information. However, no meaningful differences existed in the results when the income data were removed. With the income variable removed from the regression, adults over the age of 55 were 1.31 times more likely to recall the PA advertisement ( $p = .06$ ) and 1.32 times more likely to recall the healthy eating advertisement ( $p = .05$ ).

**Table 3**Results of the physical activity recall (prompted) logistic regression ( $n = 1093$ ).

	Model 1—demographic Odds ratios (95% CI)	<i>p</i> value	Model 2—includes social cognitive variables	<i>p</i> value
Age group				
18–54 years	1.00		1.00	
55+	1.44 (1.03–2.03)	.04	1.46 (1.04–2.06)	.03
Gender				
Male	1.00		1.00	
Female	1.27 (.92–1.76)	.15	1.29 (.93–1.79)	.13
Education				
Less than high school	1.00		1.00	
High school or technical	.70 (.39–1.22)	.20	.71 (.40–1.26)	.24
University complete	.72 (.51–1.01)	.06	.72 (.51–1.02)	.07
Income				
Less than \$20,000/year	1.00		1.00	
\$20,000–39,999	1.21 (.53–2.73)	.65	1.28 (.56–2.90)	.56
\$40,000–59,000	.76 (.47–1.24)	.27	.79 (.48–1.30)	.37
\$60,000–79,999	.93 (.60–1.58)	.90	.97 (.60–1.60)	.92
\$80,000–99,999	.93 (.59–1.48)	.77	.96 (.60–1.52)	.85
Greater than \$100,000	1.19 (.67–2.11)	.56	1.21 (.68–2.15)	.52
Activity level				
Active	1.00		1.00	
Not active	.81 (.60–1.12)	.20	.76 (.53–1.09)	.14
Self-rated health				
Excellent			1.00	
Very good			1.23 (.45–3.40)	.69
Good			1.21 (.47–3.15)	.69
Fair			1.23 (.48–3.17)	.67
Poor			.90 (.33–2.42)	.82
Physical activity beliefs <sup>a</sup>			1.00 (.99–1.01)	.71
Intentions <sup>a</sup>			1.01 (.96–1.07)	.74

<sup>a</sup> Continuous variables.**Table 4**Results of the healthy eating recall (prompted) logistic regression ( $n = 1093$ ).

	Model 1—demographic Odds ratios (95% CI)	<i>p</i> value	Model 2—includes social cognitive variables	<i>p</i> value
Age group				
18–54 years	1.00		1.00	
55+	1.39 (.99–1.94)	.06	1.36 (.97–1.91)	.08
Gender				
Male	1.00		1.00	
Female	.92 (.67–1.26)	.62	.93 (.67–1.29)	.65
Education				
Less than high school	1.00		1.00	
High school or technical	.37 (.22–.65)	.000	.39 (.22–.68)	.001
University complete	.54 (.40–.77)	.001	.54 (.38–.78)	.001
Income				
Less than \$20,000/year	1.00		1.00	
\$20,000–39,999	.98 (.47–2.06)	.96	1.04 (.49–2.21)	.92
\$40,000–59,000	.84 (.52–1.37)	.50	.89 (.54–1.46)	.64
\$60,000–79,999	1.16 (.71–1.89)	.56	1.10 (.67–1.80)	.70
\$80,000–99,999	1.20 (.75–1.91)	.45	1.19 (.74–1.91)	.47
Greater than \$100,000	1.49 (.83–2.68)	.19	1.55 (.85–2.80)	.15
Fruit and vegetable consumption				
<5/day	1.00		1.00	
5–10/day	.62 (.25–1.50)	.29	.58 (.23–1.38)	.21
>10/day	.56 (.23–1.38)	.21	.51 (.21–1.26)	.15
Self-rated health				
Excellent			1.00	
Very good			.67 (.21–2.10)	.49
Good			.70 (.23–2.10)	.52
Fair			.64 (.21–1.92)	.43
Poor			.40 (.13–1.27)	.12
Diet beliefs <sup>a</sup>			1.00 (.99–1.01)	.65
Intentions <sup>a</sup>			.98 (.92–1.05)	.57

<sup>a</sup> Continuous variables.

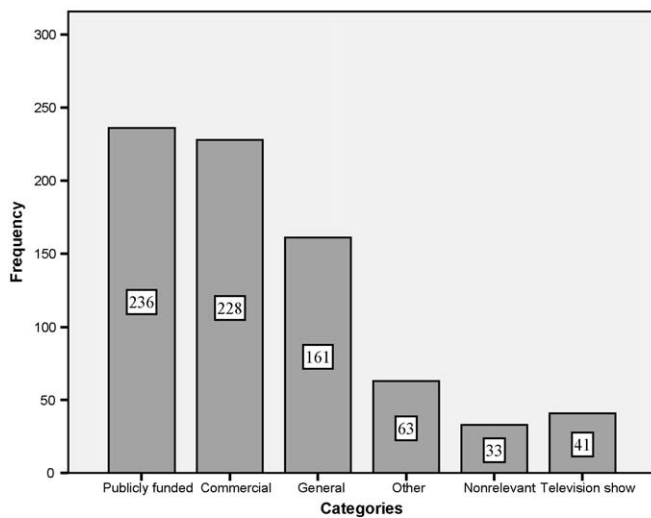


Fig. 1. Frequencies of cited categories for physical activity advertising unprompted recall.

websites. Under the “grim reaper comments” theme, neutral, positive, and negative comments were made. Source credibility included comments about the Government of Alberta and suggestions of what organizations would be considered credible or not. The website theme included considerations specific to seniors and the Internet as a source of health information and finally suggestions were made about appropriate advertising for older adults.

*Comments regarding the “grim reaper”.* Comments classified as neutral were mostly about the target of the advertisements and understanding of the purpose of the advertisements. Both these ideas are exemplified by one participant who said: “I get the impression that that was for older people. And perhaps even younger than fifty-five? Because, I mean, we all have that yearning for immortality I guess, we want to live forever, so if you want to live forever you better eat healthy and get some exercise.” Positive comments related to how the advertisements attracted attention and made you think. Some participants also commented positively about the humor: “I thought that’s what kinda caught my attention ‘cause I, usually I’ll get up and do something, commercial, but that one’s so goofy, you have to stop and look at it.”

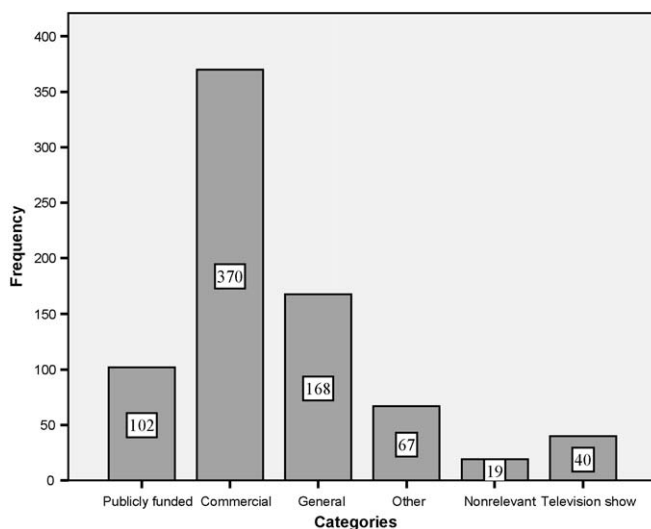


Fig. 2. Frequencies of cited categories for healthy eating advertising unprompted recall.

However, the majority of comments about the advertisements were negative including contradictions of some of the positive things. For example, several participants felt that the advertisements were not aimed at those over 55 and the advertisement[s] “*certainly wasn’t for old people.*” In further contradiction, some commented negatively about the humorous aspect: “*But it’s like a slap-stick comedy. Because you can kinda empathize with the guy who’s getting hurt [the grim reaper]. That’s where the focus goes, away from the point you’re trying to make.*” Similarly, another participant said that “*you have to be really careful about humor because the grim reaper hit one person one way and one person another way.*” Also, the grim reaper character was not popular either as a character (“*What sticks in my mind is that I didn’t like the grim reaper*”) or as a symbol (“*people our age know we’re gonna die. We’ve all faced death already. What the accent should be on is enjoyment of the life that you have*”). Further, although the grim reaper attracted attention, the character also took away from the message: “*I saw the grim reaper skulking up, but that’s all I saw.*” Sentiments regarding the use of the grim reaper can be summed up by one participant who thought that “*it [the health message] can be put into a commercial without the grim reaper.*”

Other comments were about not understanding the meaning of the healthy eating advertisement. For example, some participants thought it was an anti-littering advertisement because the grim reaper slipped on a banana peel and the advertisement had to be explained to them by other members of the group. Others made general comments that the advertisements were not easily understandable. One participant spoke aloud her thought process when trying to understand the healthy eating advertisement “*Well, in the park setting, she’s eating a banana. And that’s healthy... the message is if you don’t eat healthy but... a lot of it is left the audience.*” Another participant commented that “*It didn’t really come and hit you in the eyes*”. In a similar vein, a comment was made about how there was no speaking at all in the advertisements except at the very end when the website URL appeared and a woman’s voice said “*Brought to you by the Government of Alberta*”. This participant commented: “*I’ve just recently been noticing how many commercials have no verbal... anything. They’re assuming though, now, that everybody’s literate. And not everybody is literate. There is a huge population out there who can’t read.*” Finally, several participants thought that the advertisements were “*a waste of money on the government’s part.*”

*Source credibility.* The government was not considered a credible source by the majority of participants: “*I don’t trust anything that’s put out by the government because a lot of the times it could be just propaganda*”. In addition there was some cynicism regarding the government’s motives in promoting health: “*my feeling is if the government said this ad is brought to you by the province of Alberta then there’d be all hell to pay because it’s political.*” However, the government was considered to be more credible than commercial companies: “*that’s much more credible than, than getting it from the Bowflex people who are selling a product.*” Many participants mentioned doctors and their governing bodies such as the College of Physicians as the most trusted source for health promotion information. The use of celebrity also emerged. For example, participants in one group mentioned an athlete from their town who won an Olympic gold medal in cross-country skiing: “*she only appears for seconds... But everybody knows Becky. And in the two or three seconds she’s on camera, you relate to that ad.*” However, it is important that participants can relate to the celebrity as another participant commented at the suggestion that athletes could be used: “*retired hockey players though have done a lot of body building their whole lives. They’re not ordinary people.*” This prompted several participants to mention that ordinary people such as housewives and farmers would be good to use in such advertisements.



**Websites.** While some participants reported being very technologically savvy (e.g., one text messages her grand-daughter), others reported not using the Internet at all. However, regardless of whether they regularly accessed the Internet, many participants commented about accessibility issues: “*That always makes me a little upset when I see that [the Healthy U URL]. I think, not everyone has a computer*”. Further, access to computers can be more difficult for rural residents as commented by one participant: “*everybody expects that we all have computers and we are all on the internet. And we’re not. Especially in the rural areas, because you don’t get high-speed internet. . . in the country. . . there are just lots of us in the rural sections who don’t have it.*” Another participant commented about the ease: “*I’d rather have the printed. . . matter. Then it would be on hand. Instead of having to run in to the computer all the time.*”

#### 4. Discussion

The goal of the overall *Healthy U* campaign is to encourage Albertans to be physically active and to eat at least five to ten servings of fruits and vegetables per day. The television advertisements evaluated in the current research were aimed at achieving this goal with adults aged 55 and over. The results of the quantitative and qualitative data indicate this goal was not met and the findings have implications for other health promotion campaigns. Indeed, the first step in post-program evaluation is to test whether the campaign reached the target audience (Bauman et al., 2006) and our results show that unprompted recall was very low (less than 1%). Achieving awareness of the advertisements is the first step toward a successful campaign but the low exposure of this campaign likely contributed to the low recall. The “grim reaper” *Healthy U* campaign only ran for eight weeks on one television station. Despite these low recall rates, there was some indication that the campaign reached the target audience as the quantitative data showed greater recall of the advertisements in the target audience of adults over the age of 55 compared to younger participants. However, there were no differences in other variables in the Hierarchy of Evaluation Framework. Although direct comparisons are not possible because of changes in advertisements and survey methods, results from the 2002 survey commissioned by *Healthy U* indicated a prompted recall rate of 41% for television advertisements at that time (Criterion Research Corp, 2002).

The prompted recall results from the current study (18–19%) were lower than unpublished survey findings of the most recent *Healthy U* campaigns reported by the Government of Alberta (23–39%; personal communication). Thus, the campaign recall from our survey is significantly less than the government findings and the “grim reaper” campaign recall is lower than the 41% reported for previous campaigns. The discrepancy in the “grim reaper” surveys may be because different questions were asked in the two surveys. The government evaluation asked about recall of the “grim reaper” character whereas the current study asked about recall of the *Healthy U* campaign. This may indicate that *Healthy U* is not yet a highly recognizable brand in Alberta as participants recalled the character but not the brand. Therefore, higher recall was reported when participants were asked to recall the “grim reaper.” In support of this finding, the results of our qualitative data showed that the “grim reaper” character used in the advertisements did draw attention but that often the feeling left was negative. In general, the participants felt that the grim reaper detracted from the message, that the message was not immediately evident, and that the intended humor was not well received by all participants. Similarly, respondents to the unpublished Government of Alberta survey (personal communication) made several comments about both the healthy eating and PA advertisements such as “found it distasteful”, “poor ads, badly done”, “don’t like it”, and “thought it

was stupid”. Thus, the lack of quantitative differences in beliefs and intentions may be because the wrong kind of attention was drawn to the advertisements. This is an important finding because it sheds light on possible reasons for lack of changes in social cognitive variables even among those who were aware of the advertisements. Future evaluation research should consider examining possible reasons for the lack of awareness to further inform the development of health promotion campaigns.

The effectiveness of exposure on campaign success is exemplified by the successful *Wheeling Walks* campaign. Ninety percent of the target population heard of the campaign and there was a resultant significant increase in walking behavior (Reger et al., 2002). Hornik (2002) identified ways in which exposure to a health promotion campaign can help change behavior. For instance, repeated exposure can help to shape norms within a society and thus influence social expectations or high exposure might result in social discussion about the message. Results of our qualitative data indicate that because of the distracting and to some, distasteful, nature of the “grim reaper” there would be little positive influence on social expectations or discussion of the issues of physical activity or healthy eating as a result of watching these advertisements. Further, the results of the unprompted recall question showed when participants were asked to name either physical activity or healthy eating advertisements a wide range of responses was generated. This was especially evident with the healthy eating question with almost half of the participants naming a commercial source of information (e.g., cereal companies and fast food restaurants). Thus, the number of commercial advertisers may add to the confusion regarding key messages about healthy eating and physical activity (Mckay et al., 2006).

Our research also provided qualitative insights into source credibility. Smith et al. (2005) reported that presenting a credible source can have a positive influence on the impact of health promotion campaigns. Although our survey results showed no significant effect of the attribution source on intentions, the results of our qualitative data indicate that though more credible than commercial advertisers, governments may not be considered credible. Our quantitative results did not support the findings of other researchers who found that misattributing the source of the advertisement to a commercial company moderated the influence of advertising effectiveness (Hassan et al., 2007). However, the research by Hassan et al. was conducted in Eastern European countries where there may be different perceptions of the government and of the motives of commercial companies. Given these mixed results, further research is needed to determine the credibility of the government as a source of health information with various populations and to investigate if correctly attributing the source of an advertisement can influence the success of health promotion campaigns. Triangulating the qualitative and quantitative results from our research showed that a strong, credible source of information about healthy eating and physical activity remains elusive among those surveyed.

Websites have been advocated as an inexpensive alternative to traditional mass reach health campaigns (Abroms & Maibach, 2008). These authors cite successful campaigns that have used a website to increase their reach and engagement (e.g., VERB campaign). However, our quantitative results indicated few participants recalled the prompt to go to the website and even fewer said they would likely go to the website. The first problem is, again, that of exposure; the website was very briefly mentioned at the end of the advertisement and only in a written form. Therefore, many participants might have missed the website URL altogether. Further, one insightful focus group participant commented on the assumption of literacy now made by many advertisers. This relates to the demographic characteristics of website users. The majority of our survey respondents who recalled the website were younger

than 55 years. The focus group participants were split in their use of the Internet with some saying they never used it, while others used it regularly. Several participants commented that rural consumers may not have access to high speed Internet. Others commented that not everybody has a computer so it should not be the only source of information. These findings echo the conclusion made by Benigeri and Pluye (2003): “For educated people who know how to find useful information on the Internet regarding self care and disease prevention, and who also know how to deal with the health care system, the Internet holds great promise” (p. 384). Thus, the low intentions to go to the website among those who recalled the prompt may reflect a number of difficulties with website promotion and access in health campaigns. It is possible that Internet-based campaigns may increase the knowledge gap about health information between the most and least advantaged groups in the population (Tichenor, Donohue, & Olien, 1970).

This was a naturalistic study that independently evaluated a campaign that was developed and implemented over the course of a few months. Therefore, it was impossible to gather baseline data. However, to partially overcome this limitation we were able to compare our findings to the yearly evaluations conducted by *Healthy U* which showed the “grim reaper” was not as well recalled as other *Healthy U* campaigns. It is also important to consider the possible influence of other televised health promotion campaigns that were aired concurrently. The most important of these are other *Healthy U* advertisements aired at the same time aimed at teenagers. Again, because of the independent nature of this evaluation and the structure of the *Healthy U* program (separate groups creating different advertisements) it was unknown to us that these advertisements also existed. Therefore, our prompted recall was of the *Healthy U* brand rather than the specific senior-targeted advertisements. However, the low recall rates to this question indicate overall poor recall for this campaign. The qualitative data helped inform the nature of awareness and helps us understand why the campaign was not successful in changing intentions or behaviors. Another concurrent campaign was Canada’s *ParticipACTION* which was relaunched in February, 2007. This was one of the most successful physical activity campaigns in the world and recall of the *ParticipACTION* brand was very high (Bauman, Madill, Craig, & Salmon, 2004). In fact, our unprompted recall question showed that recall of this brand remains high with 118 participants mentioning *ParticipACTION*. Further, the lag time between the “grim reaper” campaign ending and participants completing the survey, which may have been up to two months, may have affected recall rates. However, the survey started immediately following the end of the campaign. Given that hundreds of people were surveyed very early in the two-month period, and still a <1% unprompted response was observed; this would suggest the low recall had more to do with the campaign than the timing of the survey. A final limitation that should be noted is the relatively low response rate, thus the selection bias may skew the sample toward those already interested in the topic.

In conclusion, the strengths of triangulating the quantitative survey data with the qualitative focus group data illustrates that although there may be increased awareness of a campaign the reasons for the attention paid to the advertisement should be evaluated. This research showed that the attention paid to the advertisements was likely due in part to negative reactions to the “grim reaper” character which may explain why there were no changes in beliefs or intentions. Another important finding is that, although an excellent website providing further information about healthy eating and physical activity was available, the likelihood the target audience would go to the site is very low. Thus, health promoters should be cautious about websites as the primary source of information, particularly for older adults. Finally, the finding that the government was not considered a credible source

is of interest. Of course, one cannot misrepresent the source of an advertisement, but how the government is perceived should be considered in future research. Abroms and Maibach (2008) argued that effective public health media campaigns have well designed messages and are disseminated with a broad frequency so that they reach their target audience. The *Healthy U* campaign seemed to have been unsuccessful on both these levels but the lessons learned can serve as valuable information in the development of future campaigns.

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