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THE ROLE OF SOCIALIZING AGENTS IN COMMUNICATING HEALTHY EATING TO ADOLESCENTS: A CROSS CULTURAL STUDY

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Keywords: health promotion – advertising execution – persuasion – China – Denmark

Abstract

A survey was conducted of 386 Danish and Hong Kong adolescents aged 11 to 16. Results showed that the consumption of relatively unhealthy food was common among respondents. Looking at socializing agents, respondents claimed that parents asked them to eat healthy food more often than the government publicity, teachers or friends. Parents were also perceived as being the most effective source in encouraging them to eat healthy food. Respondents considered news and fear appeals for communicating healthy eating the most effective, while popularity and achievement appeals were considered less effective. There were some gender and age differences in the liking and perceived effectiveness of five advertising appeals. Respondents with higher collectivism scores showed a higher liking and perceived effectiveness of advertising appeals.

(120 words)
THE ROLE OF SOCIALIZING AGENTS IN COMMUNICATING HEALTHY EATING TO ADOLESCENTS:
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Introduction

Obesity is a global problem afflicting all age groups, bringing social and economic burdens. The direct economic costs of obesity have been assessed in several developed countries as being 2 to 7 percent of total health care costs (Department of Health 2005). Overweight and obesity bring about not only physical problems, but are also associated with a number of psycho-social problems including body shape dissatisfaction and eating disorders. People with obesity are often confronted with social bias, prejudice and discrimination (Chan et al. 2009).

Studies indicate the importance of developing healthy eating habits among people at a young age. Yet, obesity is steadily increasing among young people. Indeed it is estimated that at the turn of the 21st century there were over 155 million overweight children and youth in the world (Lobstein et al., 2004).

As obesity has become an increasingly serious problem globally, there has in recent times been an increase in research studying how to communicate healthy eating habits to people, and the role of various socializing agents such as parents, government publicity, teachers, and peer groups. With respect to media influence, the comprehensive review by Hastings and colleagues (2003, see also Livingstone, 2005) reveals that the recommended diet receives little promotional support through television advertising. Furthermore, the
review provides support for the claim that food advertising has an effect on children’s food preferences, purchase behavior and consumption, although direct causal links between food advertising and food eating behaviors has been contested in the literature (Young, 2003). Social services marketers try to promote good eating habits directly to the children and indirectly through the children’s parents (Chan et al., 2009).

Socialization has been defined as “the process by which one acquires a personal identity (sense of self or self-concept), which entails learning how to act according to the rules and expectations of a particular culture” (See Newman 2003, pp. 135-36). According to the theory of planned behavior, intention to perform a particular behavior depends on attitudes toward the behavior, subjective norms about the behavior, and the perceived behavior control (Ajzen, 1991). The concept of “subjective norms” is related to the perception of various socializing agents. The concept of “attitudes toward the behavior” can be related to the attitudes toward messages that communicate the behavior. So, if adolescents perceive a strong influence from the socializing agents and perceive positive attitudes toward the messages that communicate to them about healthy eating, they will be more likely to adopt healthy eating behavior. Our philosophical approach is that adolescents are socialized and embedded into social structures and institutions that shape their dispositions towards and capacities for healthy eating. With this ontology, effective health communication to young people should be based on a sound understanding of their eating habits, their perceptions of
the various socializing agents communicating healthy eating habits to them, and their perceptions of different communication appeals regarding healthy eating. While these issues have been researched in the context of younger children, the perceptions of adolescents have not been explored. This would seem to be an important area for research, since adolescents are more often away from home and the watchful eyes of their parents. Which socializing agents do adolescents perceive as being effective in communicating healthy eating messages?

If advertisements are used to promote a healthy diet among adolescents, what types of appeals should be used? Will social appeals work better for adolescents endorsing collective values? Will individualistic appeals such as love and achievement appeals work better for adolescents endorsing individualistic values?

The current study attempts to examine the role of socializing agents and attitudes toward various health message appeals in the context of health communication in a cross-cultural setting. The results will enable us to articulate the interplay between personal influence and media influence in different cultures.

A recent review of international advertising research proposed that a model of when advertising standardization is feasible and how it works would represent a major advance in the literature (Taylor, 2005). Taylor (2005) also suggested that in conducting cross cultural advertising research, there was a need to include scales to measure the cultural dimensions of interest (e.g. individualism versus collectivism) at the individual level. It would provide a
“manipulation check” as well as allow researchers to assess the impact of cultural dimensions at an individual level. The current study was designed to respond to this call for research and advance our knowledge of how to promote healthy eating among adolescents with different value orientations and in different cultural settings.

**Background**

In this paper, healthy eating is defined by the eating behaviors that can enable the person to achieve “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 2007).

Scholars generally agree that healthy eating habits are developed through a process of socialization, in which families, schools, the community, the government and international health organizations may all play an active role (Kelly et al., 2006; McGinnis et al., 2006; Raiha et al., 2006). Parents serve as role models and influence adolescents’ purchase behavior directly (McNeal and Ji, 1999). Empirical data support the notion that parental support for healthy meals and nutrition skills have a positive association with adolescents’ healthy food choices and healthy eating habits (Raiha et al., 2006; Young and Fors, 2001). Schools also disseminate nutrition and health information through the formal curriculum as well as extracurricular activities. Schools can also support healthy eating by monitoring the nutrition values of the food supplied in lunches and snack shops (Nutbeam, 2000). Interestingly, however, peers have been shown to have a negative influence on healthy eating (Kelly et al.,
Conflict between parental influence and peer influence may prompt young consumers to refuse to bring healthy food to school when their friends buy or consume food and beverages that are high in calories and low in nutrients (these foods are sometimes termed as junk foods). Peer influence on body weight and body image also triggers unhealthy dieting practices such as vomiting or using laxatives for weight control (McGinnis et al., 2006).

Governments and international health organizations may play a role in health promotion by advocating balanced diets and running health-related publicity campaigns.

Apart from parents, teachers, peers and governments, young consumers will normally be addressed by food advertisements, which may sometimes encourage them to put pressure on their parents to purchase foods which are unhealthy (Kelly et al., 2006). In 2004, an estimated US$15 billion was spent in the United States on advertising and marketing directed at children and youth, of which a major share was food and beverage marketing (Schor, 2004). Through the use of cartoon figures, jingles and animations, food advertisements aimed at children associate the consumption of foods with fun, enjoyment and peer acceptance (Center for Science in the Public Interest, 2003).

Socializing agents including parents, schools, governments, friends, and food advertisers are thus competing in influencing adolescents’ health perceptions and food choices. Previous studies have examined the role of various socializing agents in influencing the eating habits and behaviors of children, but the important adolescent group has so far been ignored. These
effects need to be studied among adolescents, since teenagers are gradually becoming more independent in both their thinking and behavior (Eysenck, 1998).

In the light of the previous research and the absence of any cross-cultural research on adolescents, this study was designed to explore the issue. It was designed to delineate relationships rather than predict their effects. With this in mind, the following research questions were posed:

RQ1. How do Danish and Hong Kong adolescents differ in their perceptions of various social influences that shape eating habits?

RQ2. How do Danish and Hong Kong adolescents differ in their responses to advertising appeals (e.g. messages about popularity, love, achievement, news and fears) that discourage unhealthy eating?

RQ3. How do adolescents endorsing different levels of individualistic/collective values respond differently to advertising appeals that discourage unhealthy eating?

The cultural context

To address the research questions, adolescents in Denmark and Hong Kong were studied because of their distinctive historical, cultural and social settings. Denmark and Hong Kong are both rather small and homogeneous areas at an advanced stage of technological development.

Although the prevalence of overweight among adolescents in Denmark is below the
European average (World Health Organization, 2008), overweight in Danish children and adolescents aged 4 to 18 increased significantly from 11 percent in 1995 to 14 percent in 2000-2002 (Matthiessen et al., 2008). Amongst 11-15 year-olds 12 percent of the youngsters were overweight in 2006 (Sundhedsstyrelsen, 2008).

Obesity problems among Hong Kong elementary school students aged 6 to 13 increased from 16 percent in 1997/98 to 21 percent in 2007/08. It has been projected that by 2013, one of every four Hong Kong teenagers aged between 6 and 18 would be obese (Information Services Department, 2008). Both societies are subjected to marketing efforts of global food advertisers including soft drinks and fast food restaurants.

Despite the similarities, the two societies are different cultures. Culture in the current study refers to the “collective mental programming” that distinguishes one society from one another (Hofstede, 1983). Among the four cultural dimensions proposed by Hofstede (1980; 1983), Denmark and Hong Kong differed most in individualism as well as power difference. The nation’s individualism scores for Denmark and Hong Kong were 74 and 25 respectively. The nation’s power distance scores for Denmark and Hong Kong were 18 and 68 respectively (http://www.geert-hofstede.com/hofstede_dimensions.php). Denmark was high on the individualism scale while Hong Kong was low on the scale. So, social influences are expected to play a more important role in Hong Kong than in Denmark. It is possible that the individualism/collectivism cultural dimension will have an impact on consumers’ responses
to individual-based or social-based advertising appeals.

The Danish family in general has become “a family of negotiation” (Gram, 2005). Accordingly, the modern culture of individualism is moderated in Danish families where the adolescent is viewed very much as an individual to treat with respect, a natural partner in family decisions and a social being in his or her own right (Andersen et al., 2008). The Danish public school covers the whole period of compulsory education. The public school consists of a pre-school class, 9 years of obligatory education and a voluntary 10th year. Municipal public schools teach about 88 percent of all pupils of compulsory school age. The Danish education system is not examination-driven and public schools provide basic education free of charge (Andersen et al., 2007). Almost all Danish children participate in different sport activities. The most popular sports are football and swimming. More than 80 percent engage in regular leisure activities such as sports, scouting, drama, film, dance, and horseback riding (Hansen et al., 2002).

The education system in Hong Kong is examination-oriented (Children’s Council Working Committee, 2005). Hong Kong children enjoy very little leisure time, get relatively little exercise, and are considered to be extremely inactive (Hui, 2001). Most elementary schools offer only two physical education classes a week. The lack of physical exercise has been proposed as a factor contributing to the prevalence of obese children in the society (Hui, 2001).
Governments and governmental agencies have for a long time been active in promoting healthy eating patterns, and nutrition has long been a central arena for public engagement and regulation in most European countries (Kjærnes, 1993). However, public health promotional campaigns have had limited success. Over the past decade, several studies have found little association between nutrition knowledge and food intake (Shepherd and Towler 1992; Stafleu et al., 1996), thus questioning the effectiveness of public healthy eating campaigns.

The official Danish definition of healthy eating, as well as the Danish governments’ strategies of promoting it, have changed several times since this activity was first instigated in the 1930s. In its recent form, the notion of healthy eating emphasizes the combination of a balanced diet with physical activity. Recent governmental campaigns have focused on increasing Danish citizens’ knowledge and action regarding the recommended quantities of fruit and vegetables (e.g., 6 om dagen, 2008). While these recommendations are well known by the majority of the Danish population, such informational efforts have been met with limited success when it comes to behavioural changes, especially among younger people. According to Holm (2003), promotional messages of healthy eating targeted at young citizens have always been too abstract to be effective.

The Hong Kong Government has taken an active role in promoting healthy eating since 2005. Several campaigns using television commercials and outdoor posters were launched about healthy eating and balanced diet in 2005, as well as healthy lunches and snacks in 2006.
Yet an analysis of all these government publicity materials reveals that they were targeted at younger children, with no publicity targeted at adolescents in secondary schools and higher education institutes.

Method

Questionnaire development

A draft questionnaire addressing the research questions was formulated in Chinese based on the results of pilot focus groups conducted in Hong Kong and in Denmark. In Hong Kong, four focus groups were run involving 22 participants from grades 7 to 9. Five focus groups were conducted in Denmark that included 39 participants in 7th grade.

The sessions explored such questions as, “Can you tell me who asks you to eat healthy/unhealthy foods?” The results were used to guide the design of a structured questionnaire. The questionnaire was tested by personally interviewing seven young persons aged 12 to 14. To ensure linguistic equivalence, the questionnaire was translated into English, and then translated into Danish. A graduate student fluent in Danish and English back-translated the Danish questionnaire to English. Another graduate student fluent in English and Chinese back-translated the English questionnaire to Chinese. The process ensured both questionnaires were comparable in wordings and meanings.

The final questionnaire had two parts. The first part collected information about eating habits as well as about the influence on healthy eating of four socializing agents. All the questions
were close-ended. General eating habits were measured in terms of the self-reported frequency of
dieting behaviors such as eating out with friends and the consumption of soft drinks on a
four-point scale (1=never, 4=five or more days a week). Perceived social influences were
measured by recollections of how frequently a socializing agent had asked the respondents to eat
more healthy food (1=never, 5=very often) and the perceived effectiveness of these agents
(1=very ineffective, 5=very effective).

The second part of the questionnaire collected respondents’ perceptions of five fictitious
print advertisements about consuming less soft drink. Each ad was based on a different appeal
type: popularity, love, achievement, news, and fear. These advertisements were constructed by us
using pictures downloaded from books and web sites. All five advertisements identify the local
Department of Health as the advertiser and share the same headline. One author who taught
advertising copy writing selected the pictures and wrote the body copy (see Appendix 1 for the
English translations of an example). As the headlines and body copy are straightforward and
non-symbolic, we assume stimulus equivalence since their literal meanings are comparable in
both societies. Respondents were asked to evaluate their liking for the ads and their perceived
effectiveness using a five-point scale (1=dislike very much, 5=like very much; 1=very ineffective,
5=very effective). Soft drink was selected as the focus of the de-marketing campaign because
young consumers are familiar with soft drinks, according to the focus group interviewees. Also,
soft drinks are supported by aggressive advertising campaigns targeted toward young consumers,
often employing youth “idols” as spokespersons. The questionnaire collected respondents’ orientation toward individualistic or collective values. An 8-item scale on individualism and an 8-item scale on collectivism were used (Triandis and Gelfand, 1998). The wording of “a coworker” in the scale was modified to “my friend” and the wording of “my job” was modified to “my work” as most of the respondents did not have job experience. Respondents were asked to express their agreements to statements such as “I rely on myself most of the time” (an item in the individualism scale) and “I feel good when I cooperate with others” (an item in the collectivism scale) using a five-point scale (1=disagree very much, 5=agree very much). Demographic information including age and sex was collected. Cronbach alpha coefficients of individualism and collectivism of the Danish sample were 0.65 and 0.73 respectively. Cronbach alpha coefficients of individualism and collectivism of the Hong Kong sample were 0.81 and 0.79 respectively. Factor analysis results indicated that the factorial structure of the two sub-samples were very similar, indicating measurement equivalence.

Data collection

Data in Denmark was collected in May 2007. The respondents were 234 students in grades 7 to 8, aged 12 to 15 years. The questionnaires were self-administered in the classrooms of five secondary schools. The response rate was 98 percent. All the schools were in low to middle income residential neighborhoods. All aspects of the research procedure were conducted in Danish. Data in Hong Kong was collected in March 2007. The
respondents were 152 students in grades 7 to 9, aged 12 to 16 years. The questionnaires were self-administered in the classrooms of three secondary schools (two co-educational and one school for boys). The response rate was 95 percent. All the schools were in low to middle income residential neighborhoods. All aspects of the research procedure were conducted in Chinese.

Data analysis

Frequency distribution of eating habits was tabulated. Chi-square tests were conducted to examine if Danish and Hong Kong respondents differed in their eating habits. Mean scores of the influence of four socializing agents were compiled for Danish and Hong Kong respondents. Mean scores of liking and perceived effectiveness of five advertising appeals were compiled for Danish and Hong Kong respondents. Since the influence of the four socializing agents and the liking/effectiveness of five advertising appeals were collected for each respondent, one-way repeated-measures analysis of variance (ANOVA) was performed to identify any significant differences within the sub-sample. To examine difference between Danish and Hong Kong respondents, pairwise t-tests were conducted. The finding section first presents the one-way repeated-measures ANOVA results for each sub-sample, followed by the independent samples t-test results between the Danish and the Hong Kong sub-samples.

Findings
Fifty-one percent of the respondents were male and 49 percent were female. The mean age of the respondents was 13.4 years. There was no significant difference between the two sub-samples in terms of age profile. However, the Hong Kong sub-sample had a higher proportion of boys (57 percent of boys in Hong Kong sub-sample and 44 percent of boys in the Danish sub-sample).

The mean scores for individualism among Danish and Hong Kong respondents were 3.2 and 3.4 respectively. Contrary to Hofstede’s national scores of Denmark high in individualism and Hong Kong high in collectivism, t-tests indicated that Hong Kong respondents were more individualistic than Danish respondents (t=2.5, df=382, p<0.05). Hong Kong respondents agreed significantly more on three items on the individualism scale than Danish respondents, including “I often do my own thing”, “It is important than I do my work better than others”, and “I get tense and aroused when another person does better than I do”. The mean scores for collectivism among Danish and Hong Kong respondents were 4.1 and 3.7 respectively. Contrary to what is expected from the Hofstede’s national scores, t-tests indicated that Danish respondents were more collective than Hong Kong respondents (t=-7.4, df=383, p<0.001). Danish respondents agreed significantly more on six items on the collectivism scale than Hong Kong respondents including “The well-being of my friends is important to me”, “If my friends gets a prize, I would feel proud”, “I feel good when I cooperate with others”, “To me, pleasure is spending time with others”, “Family members
should stick together, no matter what sacrifices are required”, and “If is important to me that I respect the decisions made by my groups”.

The respondents’ reported eating habits are summarized in Table 1. There were similarities and differences among Hong Kong adolescents and Danish adolescents in their eating habits. Both Hong Kong and Danish adolescents quite often bought food during a school day. Hong Kong respondents more often ate out with friends than Danish respondents. Danish respondents more often consumed soft drinks and snacks than Hong Kong respondents. Danish respondents also more often brought a lunch bag to school than Hong Kong respondents.

[Insert Table 1 about here]

Respondents were asked to recollect how often various socializing agents ask them to eat healthy food. Figure 1 summarizes the results. Among the Danish respondents, the one-way repeated-measures ANOVA results indicated that there was a significant source effect [Wilks’ Lambda = 0.279, F (3, 218) = 187.5, p≤0.001]. LSD pairwise comparisons of the means revealed that parents had a significantly higher influence than teachers and government publicity, who in turn had significantly higher influence than friends as a source asking the respondents to eat healthy food. Among Hong Kong respondents, the one-way repeated-measures ANOVA results indicated that there was a significant source effect [Wilks’ Lambda = 0.305, F (3, 149) = 113.1, p≤0.001]. LSD pairwise comparisons of the means
revealed that parents and government publicity both had significantly higher influence than teachers or friends, showing that they were more often recalled as a source asking the respondents to eat healthy food.

Independent samples t-test results indicated that there was no significant difference in perceived frequency of parents encouraging the respondents to eat healthy food between Danish and Hong Kong sub-samples. However, Hong Kong respondents more often reported that the government publicity, the teachers and the friends were encouraging them to eat healthy food than the Danish respondents.

[Insert Figure 1 about here]

The respondents were then asked how effective the various socializing agents were in convincing them to eat healthy food. Figure 2 summarizes the results. Among the Danish respondents, there was a significant source effect \[\text{Wilks’ Lambda} = 0.407, F (3, 217) = 105.3, p \leq 0.001\]. LSD pairwise comparisons of the means revealed that parents were perceived to be significantly more effective than friends or government publicity, who in turn were perceived as significantly more effective than teachers in asking the respondents to eat a healthier diet. Among the Hong Kong respondents, there was a significant effect for source \[\text{Wilks’ Lambda} = 0.607, F (3, 149) = 42.4, p \leq 0.001\]. LSD pairwise comparisons of the means revealed that parents were perceived to be significantly more effective than teachers, friends or government publicity. Thus, parents were more often perceived as being effective in asking the
respondents to eat a healthier diet among Danish as well as Hong Kong respondents.

Independent samples t-test results indicated that there were significant differences in perceived effectiveness of socializing agents in encouraging the respondents to eat healthy food between Danish and Hong Kong sub-samples. Danish respondents perceived parents and friends significantly more effective than Hong Kong respondents. On the other hand, Hong Kong respondents perceived the government publicity and the teachers more effective than Danish respondents in encouraging them to eat healthy food.

Respondents were asked to rate (in terms of both liking and effectiveness) five different advertising appeals designed to discourage soft drink consumption. Figure 3 summarizes the results for liking. Among the Danish respondents, there was a significant effect for liking of the five different advertising appeals [Wilks’ Lambda = 0.761, F (4, 224) = 17.6, p ≤ 0.001]. LSD pairwise comparisons of the means revealed that the love appeal, the achievement appeal or the fear appeal had significantly higher mean scores for liking than the popularity appeal or the news advertising appeal. Among the Hong Kong respondents, comparing the mean liking scores for the five ads revealed no significant difference among the appeal types [Wilks’ Lambda = 0.942, F (4, 147) = 2.3, p=0.06]. With the exception of the popularity and news appeal pairing, all five ads were perceived as being equally likeable.

Independent samples t-test results indicated that there were no significant differences in
liking of popularity as well as news appeals between Danish and Hong Kong subsamples.

Significant differences in liking were found in the remaining three advertising appeals.

Danish respondents reported that they liked ads using fear, achievement, and love appeals significantly more than Hong Kong respondents.

[Insert Figure 3 about here]

Respondents were asked to rate the effectiveness of five different advertising appeals designed to discourage soft drink consumption. Figure 4 shows the results. Among the Danish respondents, there was a significant effect for perceived effectiveness of five different advertising appeals [Wilks’ Lambda = 0.715, F (4, 223) = 22.2, p≤0.001]. LSD pairwise comparisons of the means revealed that the fear appeal had significantly higher mean scores than love, achievement, or news appeals, which in turn had significantly higher mean scores than popularity appeal. Among the Hong Kong respondents, the results of a repeated measures ANOVA comparing the mean effectiveness scores of the five appeals indicated that there was a significant effect for appeal type [Wilks’ Lambda = 0.571, F (4, 145) = 34.5, p≤0.001]. LSD pairwise comparisons of the means showed that the fear appeal and the news appeal were perceived as being significantly more effective than the popularity, love or achievement appeals.

Independent samples t-test results indicated that there were no significant differences in perceived effectiveness of four advertising appeals between Danish and Hong Kong subsamples.
respondents. Significant differences in perceived effectiveness were found only in the achievement appeal. Danish respondents reported that they found the ad using achievement appeal more effective than Hong Kong respondents. Hong Kong respondents showed a higher dislike of fear appeal and a higher perceived effectiveness of the news appeal than the Danish respondents.

[Insert Figure 4 about here]

The last objective of the study was to explore whether personal value orientation may affect liking and perceived effectiveness of different advertising appeals. Multiple linear regressions were conducted using sex, age, individualism and collectivism scores to predict liking and perceived effectiveness of the five advertising appeals. Two separate regressions were run for each of the two cultures. Results for Danish respondents are summarized in Table 2 and results for Hong Kong respondents are summarized in Table 3.

Liking and perceived effectiveness of the five advertising appeals showed some gender and age differences among the Danish respondents. Danish girls liked popularity and fear appeals more than Danish boys. Danish girls also perceived popularity and fear appeals more effective than Danish boys. Younger Danish respondents liked achievement appeal more and found it more effective than older Danish respondents. Individualism scores did not contribute to the prediction of liking or perceived effectiveness of the advertising appeals among Danish respondents. Collectivism scores however were significant positive predictors
of liking as well as perceived effectiveness of the advertising appeals. The adjusted R squares for all ten regression equations were significant, indicating that sex, age, and individualism/collectivism value orientation were capable of predicting liking and perceived effectiveness of the advertising appeals among Danish respondents.

[Insert Table 2 about here]

Liking and perceived effectiveness of the five advertising appeals showed some gender differences among the Hong Kong respondents. Hong Kong girls liked popularity appeals more than Hong Kong boys. Hong Kong girls also perceived popularity and fear appeals more effective than Hong Kong boys. However, no age difference was observed. Individualism scores did not contribute to the prediction of liking or perceived effectiveness of the advertising appeals among Hong Kong respondents. Collectivism scores however were significant positive predictors of liking of two advertising appeals as well as perceived effectiveness of one advertising appeal. The adjusted R squares for four out of ten regression equations were significant, indicating that sex, age, and individualism/collectivism value orientation were partially capable of predicting liking and perceived effectiveness of the advertising appeals among Hong Kong respondents.

[Insert Table 3 about here]

Comparing the regression results for the Danish and Hong Kong samples found two similarities. First, individualism scores did not demonstrate any predictive power on liking
and perceived effectiveness of advertising appeals. Second, girls liked popularity appeal more than boys. Comparing the regression results for the Danish and Hong Kong samples found three differences. First, there was no age difference in liking and perceived effectiveness of all advertising appeals among Hong Kong respondents while there was age difference in liking and perceived effectiveness of the achievement appeal among Danish respondents. Second, collectivism scores showed stronger predictive power among Danish respondents than among Hong Kong respondents. Third, the adjusted R square values were higher among the Danish sample than the Hong Kong sample.

The adjusted R squares for the regression analysis were less than 0.2 for both sub-samples, indicating that demographic characteristics and personality traits on individualism/collectivism accounted for a small percentage of the variance of liking and perceived effectiveness of health communication messages.

Discussion

Before discussing the findings, three limitations need to be recognized. First, the respondents were chosen from a non probability sample of secondary schools which may not have been representative of all schools in Denmark, Hong Kong or elsewhere, thus limiting the generalizability of the findings. Second, this study relied on self-reporting. As with all self-report studies, whether the reporting is consistent with actual behavior might be questioned. Future studies might overcome both of these problems by using more
representative samples, and by actually observing eating behavior. Third, the advertisements used in the current study identified the Department of Health as the advertiser. It may have an impact on the perceived likability or effectiveness of the advertisements.

Despite these limitations, this exploratory study has revealed two key findings which appear to have a logical and explicable relationship. First, adolescents sometimes consumed unhealthy food, such as soft drinks, candies or chips. Depending on the accessibility to the catering facilities as well as whether eating out is affordable, adolescents also eat out with friends at different frequencies. Schools in Hong Kong are often situated in close proximity to shopping malls and restaurants. The cost of eating out is relatively cheaper in Hong Kong. For example, a McDonald’s meal with fries and soft drink costs about three U.S. dollars whereas in Denmark the cost of the same meal is about ten U.S. dollars. As a result, eating out with friends is more prevalent among Hong Kong adolescents. Second, in both cultures the parents are the socializing agents who most often encourage adolescents to eat healthy food. These two findings, in tandem, would seem to reinforce the importance of this study focusing on adolescents. Unlike younger children, adolescents may not always be under the supervision of their parents, and therefore they may be making more independent eating decisions when they are outside the home.

Teachers and friends were less often cited as a source of healthy eating messages in Denmark as well as Hong Kong, and, consistent with this, were considered less effective
relative to parents. Friends may advise less often and be considered less effective because friends may know little about healthy eating. The finding that teachers advise less often and are also considered relatively ineffective is concerning. Teachers should play an important role in health education, and schools should be considered a health promotion setting (Lee et al., 2003; Cheung, 2002). Schools and teachers play an important role in health education and promotion at the crucial childhood and adolescence stage (Allensworth, 1997).

Government publicity was often recalled as a source of healthy eating messages by Hong Kong respondents, yet these were considered relatively ineffective. Danish respondents seldom recalled the government publicity as a source of healthy eating message, and they did not consider the government publicity as an effective source. The perceived effectiveness of government publicity and teachers as sources of healthy eating among Hong Kong respondents, but not among Danish respondents, may indicate that Hong Kong respondents are more receptive to authoritative sources than their Danish counterpart. Nonetheless, in both countries, and particularly in Denmark, the relative ineffectiveness of public authorities’ traditional approaches to public health education is accentuated. It therefore also highlights a clear need to develop new methods to promote healthy eating among adolescents in the public sector.

Among the Danish respondents, the love, achievement and the fear appeals were perceived as more likeable while the fear appeal was perceived as most effective in
discouraging soft drink consumption. Among the Hong Kong respondents, all five appeals examined in this research were perceived as being equally likeable, while the news and fear appeals were perceived as being the most effective. The results give evidence that the fear appeal is relatively effective in both Denmark and Hong Kong. However, the fear appeal used in the current study was more related to fear of social rejection than fear of health damage. In that sense, the fear appeal may have overlapped with the popularity appeal. Future research grounded in prospect theory (Tversky and Kahneman, 1981) might consider examining the issue of message framing and whether loss-framed messages are more effective than gain-framed messages.

Although the Hong Kong respondents were assumed to endorse collectivist values while the Danish respondents were assumed to subscribe to individualistic values, the results of the current study found the opposite: Danish respondents were found to endorse a higher level of collectivism and a lower level of individualism than Hong Kong respondents. A possible explanation for the finding may be the different approaches to primary school learning and socialization in the two societies. Whereas primary schools in Hong Kong have their roots in the British educational system, and focus on the development and performance of the individual pupil, Danish primary schools have traditionally been more attentive towards the weaker students and the creation of a sense of community among all pupils. As educational systems in Hong Kong as well as in Denmark are currently changing, additional research is
Hofstede’s national scores for individualism and collectivism are based on a study of adult employees in an international business organization in the 1980s. Students and young people were under-represented (Taylor, 2005). The findings in the current study indicate that these national scores may not be applicable to younger members of the society now. We therefore suggest that in future cross cultural studies of younger consumers, individualism/collectivism scores should be collected at an individual level.

We expected that popularity and fear appeals (reflecting peer acceptance of healthy eating or social exclusion of obese body image) should be more effective among respondents who endorse higher collectivism values while love and achievement appeals should be more effective among respondents who endorse higher individualistic values. Yet this was not the case. Results indicate that individualism scores did not contribute to the prediction of liking or perceived effectiveness of advertising appeals. Instead, collectivism scores demonstrated positive correlation with liking as well as perceived effectiveness of advertising appeals. This may suggest that respondents endorsing collectivism values are more ready to be affected by persuasive health messages than respondents endorsing individualistic values.

Danish adolescents in general showed more positive attitudes toward messages about healthy eating than Hong Kong adolescents. This may be because health messages from the government have been prevalent in the media in Hong Kong. Hong Kong adolescents may
get used to them and not find them innovative. The overall low (mostly less than 10 percent) adjusted R square values indicated that there are other important context variables which need to be included in future studies. For example, attitudes toward healthy eating in general as well as perceived control of healthy eating should be considered for inclusion in future research.

Managerial Implications

Obesity brings many problems, both social and economic. Despite the severity of the problems obesity causes, and the growing incidence of obesity, little is known about how adolescents receive and adopt various socialization agents’ requests to eat healthy, especially in a cross-cultural context. By identifying their perceptions of healthy eating habits, their perceptions of the various socializing agents/sources communicating with them about healthy eating, and their perceptions of different communication appeals, this study has provided useful information for public health officials and health educators to consider when developing communications targeted at adolescents. As companies and corporations increase their awareness towards corporate social responsibility, some private commercial food companies are beginning to explore healthy eating as an important theme to be included in their corporate strategic plans (Mikkelsen, 2005). The current study therefore also helps private food companies to develop strategies in communicating healthy eating to young consumers. Specifically, communicating healthy eating messages must take a two-pronged
approach: directly targeting the increasingly independent adolescents, and indirectly targeting adolescents via parents. Social marketers should design educational programs to empower parents in taking a responsible and effective role in communicating healthy eating to their children. In addition, government officials may need to rethink how they communicate with adolescents, and ensure they use the appropriate media and message to influence adolescents’ attitudes and behavior. The government communication might consider adopting advertisements using fear appeal, since these would appear to have relatively more influence on the adolescent audience than news, love, popularity, and achievement appeals. The food companies may communicate with the young consumers about the benefits of healthy food alternatives.

As adolescents in different cultures respond to ad appeals in a significantly different way, health educators, public health campaign designers and food companies should test and adopt advertising appeals that are most promising to their target audience in that particular culture.

**Conclusion**

This study posed three research questions relating to how Danish and Hong Kong adolescents differ in their perceptions of various social influences that shape their eating habits, differ in their response to advertising appeals that discourage unhealthy eating, and how individualistic/collectivist value influence how they respond to advertising appeals that discourage unhealthy eating. In both cultures, parents are seen as being the most frequent and
effective source in encouraging healthy eating. Also in both cultures, news and fear appeals were the most effective, while popularity and achievement appeals were considered relatively less effective. Finally, a collective value orientation demonstrated a positive correlation with liking as well as perceived effectiveness of advertising appeals while an individualistic value orientation did not correlate with liking nor perceived effectiveness of the appeals. Public health officials are likely to find the result of this study useful when deciding upon the most effective sources through which to channel their healthy eating message, and what form that healthy eating message should take. In addition, this research has generated new insights into the under-researched adolescent group, and this provides a platform for future researchers to build upon.
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Table 1. Eating habits (N=386)

<table>
<thead>
<tr>
<th></th>
<th>Never (%)</th>
<th>1-2 days a week (%)</th>
<th>3-4 days a week (%)</th>
<th>5 or more days a week (%)</th>
<th>Chi square value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bring a lunch bag to school</td>
<td>DK</td>
<td>24</td>
<td>12</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>HK</td>
<td>74</td>
<td>6</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Buy food during a school day</td>
<td>DK</td>
<td>19</td>
<td>52</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>HK</td>
<td>18</td>
<td>45</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Consume candies or chips</td>
<td>DK</td>
<td>8</td>
<td>60</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>HK</td>
<td>20</td>
<td>60</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Consume soft drinks</td>
<td>DK</td>
<td>10</td>
<td>71</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>HK</td>
<td>17</td>
<td>68</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Eat out with friends</td>
<td>DK</td>
<td>55</td>
<td>36</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>HK</td>
<td>40</td>
<td>49</td>
<td>11</td>
<td>1</td>
</tr>
</tbody>
</table>

* p<0.05; ***p<0.001
Table 2. Summary of regression analysis of predicting liking and perceived effectiveness of the five advertising appeals (Denmark sub-sample)

<table>
<thead>
<tr>
<th></th>
<th>sex (0=F;1=M)</th>
<th>age</th>
<th>individualism</th>
<th>collectivism</th>
<th>Adj. R square and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Popularity</td>
<td>-0.21***</td>
<td>-0.10</td>
<td>-0.02</td>
<td>0.33***</td>
<td>0.17***</td>
</tr>
<tr>
<td>2. Love</td>
<td>-0.05</td>
<td>-0.07</td>
<td>0.08</td>
<td>0.25***</td>
<td>0.07***</td>
</tr>
<tr>
<td>3. Achievement</td>
<td>-0.02</td>
<td>-0.14*</td>
<td>0.01</td>
<td>0.31***</td>
<td>0.12***</td>
</tr>
<tr>
<td>4. News</td>
<td>-0.10</td>
<td>-0.06</td>
<td>0.05</td>
<td>0.22***</td>
<td>0.06**</td>
</tr>
<tr>
<td>5. Fear</td>
<td>-0.25**</td>
<td>-0.09</td>
<td>0.09</td>
<td>0.06</td>
<td>0.06***</td>
</tr>
<tr>
<td><strong>Perceived effectiveness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Popularity</td>
<td>-0.16*</td>
<td>-0.09</td>
<td>-0.05</td>
<td>0.24***</td>
<td>0.09***</td>
</tr>
<tr>
<td>2. Love</td>
<td>-0.08</td>
<td>-0.09</td>
<td>0.02</td>
<td>0.24***</td>
<td>0.07***</td>
</tr>
<tr>
<td>3. Achievement</td>
<td>0.00</td>
<td>-0.19**</td>
<td>-0.04</td>
<td>0.27***</td>
<td>0.11***</td>
</tr>
<tr>
<td>4. News</td>
<td>-0.07</td>
<td>-0.02</td>
<td>0.12</td>
<td>0.23***</td>
<td>0.07***</td>
</tr>
<tr>
<td>5. Fear</td>
<td>-0.20**</td>
<td>0.00</td>
<td>0.07</td>
<td>0.15*</td>
<td>0.06**</td>
</tr>
</tbody>
</table>
Table 3. Summary of regression analysis of predicting liking and perceived effectiveness of the five advertising appeals (Hong Kong sub-sample)

<table>
<thead>
<tr>
<th></th>
<th>sex</th>
<th>age</th>
<th>individualism</th>
<th>collectivism</th>
<th>Adj. R square and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Popularity</td>
<td>-0.21*</td>
<td>0.04</td>
<td>0.00</td>
<td>0.14</td>
<td>0.06*</td>
</tr>
<tr>
<td>2. Love</td>
<td>-0.05</td>
<td>0.03</td>
<td>0.02</td>
<td>0.18*</td>
<td>0.02</td>
</tr>
<tr>
<td>3. Achievement</td>
<td>-0.16</td>
<td>-0.06</td>
<td>0.04</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>4. News</td>
<td>-0.19*</td>
<td>-0.07</td>
<td>0.16</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>5. Fear</td>
<td>-0.08</td>
<td>0.04</td>
<td>-0.05</td>
<td>0.21*</td>
<td>0.04*</td>
</tr>
<tr>
<td><strong>Perceived effectiveness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Popularity</td>
<td>-0.08</td>
<td>-0.09</td>
<td>0.05</td>
<td>0.15</td>
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</tr>
<tr>
<td>5. Fear</td>
<td>-0.06</td>
<td>-0.04</td>
<td>-0.13</td>
<td>-0.03</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Figure 1. Frequency with which socializing agents encouraged the respondents to eat healthy food

1=never, 5=very often
Figure 2. Perceived effectiveness of socializing agents in encouraging respondents to eat healthy food

1=very ineffective 5=very effective
Figure 3. Liking of the five advertising appeals

1=dislike very much 5=like very much
Figure 4. Perceived effectiveness of the five advertising appeals

1=very ineffective 5=very effective
Appendix 1 English translation of an advertisement using fear appeal

Dare to swim this summer?
Soft drink has too much sugar and it ruins the body.

Consume less soft drink!