

University Of California, Davis

Center for Advanced Studies in
Nutrition and social Marketing

The background features a large, light blue watermark of the University of California seal. The seal is circular and contains a central figure holding a book and a torch, with the text 'UNIVERSITY OF CALIFORNIA' around the top and 'LET THERE BE LIGHT' on a banner. The name 'DAVIS' is at the bottom.

Portrayals of Nutritional Practices and Exercise Behavior In Popular American Films, 1991-2000

Robert A. Bell, Ph.D., Charles R. Berger, Ph.D.,
Department of Communication, University of California, Davis

Marilyn Townsend, Ph.D.
Department of Nutrition, University of California, Davis



May 2003

Portrayals of Nutritional Practices and Exercise Behavior In Popular American Films, 1991-2000

Robert A. Bell, Ph.D., Charles R. Berger, Ph.D.,
Department of Communication, University of California, Davis

Marilyn Townsend, Ph.D.
Department of Nutrition, University of California, Davis



Acknowledgements

The authors acknowledge Diana Cassady, Lisa Craypo, and Sharon Sugerman for their contributions to our project and to the University of California, Davis Center for Advanced Studies in Nutrition and Social Marketing. Special thanks to our able research assistants, Sue H. Cho and Heather Zimmerman.

The University of California at Davis, Center for Advanced Studies in Nutrition and Social Marketing works in alliance with the California Department of Health Services (CDHS), Cancer Prevention and Nutrition Section, to improve nutrition and physical activity behaviors related to the prevention of chronic diseases. The Center for Advanced Studies in Nutrition and Social Marketing was established in 1999 with the mission to advance social marketing practice, methods and evaluation of diet and physical activity for the primary prevention of cancer and other chronic diseases in California. This collaboration was established as a joint effort to assemble a multidisciplinary team of faculty and researchers to address the complex issues in nutrition, physical activity, and cancer prevention. The Center is considered the first of its kind in the United States dedicated to examining social marketing specifically in the context of nutrition and physical activity.

Funding: The Center for Advanced Studies in Nutrition and Social Marketing is supported by the Cancer Research Program, California Department of Health Services, pursuant to Statutes of 1997, Chapters 755 and 756 (AB 1554 and SB 273), grant number 98-16026.

This report may be reproduced without prior permission. Citation of the source is requested. Additional copies may be requested from the Center's Web site <http://socialmarketing-nutrition.ucdavis.edu>

Suggested Citation: Bell, R.A., Berger, C.R., and Townsend, M. *Portrayals of Nutritional Practices and Exercise Behavior in Popular American Films, 1991-2000*. Center for Advanced Studies in Nutrition and Social Marketing, U.C. Davis, CA, 2003.

Table of Contents

Executive Summary	4
Overview	5
The Relationship Between Diet And Cancer	5
The Nature and Effects of Media Portrayals of Nutrition and Physical Activity	5
Advertising	6
Television Programming	8
At the Movies	9
Research Questions	10
Representations of Food in Popular American Films	10
Representations of Eating in Popular Films	10
Representations of Exercise in Popular Films	10
Methods	11
Sample of Films	11
Content Analysis Methods	11
Analysis of Food Portrayals	11
Analysis of Exercise Portrayals	17
Coding Procedure	20
Data Analyses	20
Results	21
Reliabilities	21
Research Questions	22
Representations of Food in Popular American Films	22
Representations of Eating in Popular Films	28
Representations of Exercise in Popular Films	28
Discussion	30
Speculating on the Effects of Movie Portrayals of Food, Alcohol, and Exercise	30
Social Learning Theory	30
Cultivation Analysis	31
Limitations	32
Conclusion	32

Executive Summary

Objectives

This pilot study describes the manner in which food, alcohol, and exercise/sport are depicted in popular films. It does so to determine if nutrition- and fitness-related images in movies are unhealthy and thus pose a *theoretical* threat to the health of viewers. The present study does not address empirically the effects of these depictions, although some speculations about potential effects are offered.

Research Questions

The present study addressed seventeen research questions that fall into four general categories. The first set of questions asked about the foods that are shown in movies. The second set of questions raised issues about movie characters' ingestion patterns. The third set of questions asked if there is any association between the demographic profile of the characters and the foods they eat. Finally, we posed a set of questions directed at describing the extent to which planned or organized forms of physical activity (exercise and sport, primarily) are shown in film.

Methods

The focus of our analysis was on the top-ten grossing films in each of the ten years from 1991 through 2000 (N=100 films). Standard content analytic procedures were used to answer the proposed research questions. Investigators developed the content categories inductively, based on the research questions posed. Two undergraduates were trained by the investigators to apply the coding instrument and procedures. One-third of films were double-coded by the coders to assess the reliability (inter-judge agreement) of their unit identification and classification decisions. One of the authors arbitrated coding disagreements.

Key Findings

Food and drink appear regularly in the 100 films analyzed. More than 20 percent of the items shown were alcohol. Those items that were classifiable into the Food Guide Pyramid categories were most likely to be fats, oils and sweets;

fruits, vegetables and dairy products were seldom shown. Branded food items appeared irregularly; a movie-goer might expect to see 1-2 branded food items in the typical movie, most likely for a soda drink or beer. The food items shown did not vary as a function of the movie's rating, although characters did tend to ingest their foods more often in R movies. Characters' demographic features were not associated with the foods they consumed, but overweight and obese characters were depicted as more frequent users of fats, oils, and sweets, and as less frequent consumers of fruits. The overweight and obese were also underrepresented in movies. While food appears often in the movies, it is typically found in the background or treated as a prop. The foods that are consumed are seldom the focus of characters' evaluations; nor are characters typically evaluated positively or negatively for their food choices. One source of concern is the frequency with which alcohol appears in movies. We found that approximately one-fifth of food items were beer, liquor or wine. Furthermore, alcohol was nearly two times more likely to be ingested than non-alcohol food items. Planned exercise and sports were also common in movies, appearing at a rate of about two incidents an hour. However, these activities rarely received comment or evaluation by any of the characters. A character's demographic profile was not associated significantly with the intensity of his or her exercise and sporting "choices." There was no evidence that the intensity or nature of exercise/sports activities were associated with movie rating, either. An analysis based on social learning theory and cultivation theory suggests that movie depictions of nutrition and exercise are unlikely to have much of an effect on viewers' behaviors.

Conclusions

In general, public health professionals would make better use of their time by focusing on reforming food advertisements rather than worrying about film portrayals of food, eating, and exercise.

Overview

This study describes portrayals of eating and intentional fitness activity in the top-grossing films released from 1991 through the year 2000. Its objective is to understand better the media environment in which Americans make important lifestyle decisions. The need for such research is suggested by two facts. First, the majority of Americans do not meet recommendations for daily fruit and vegetable consumption and physical activity, placing them at higher risk of certain cancers.¹ Second, media representations of society can cultivate beliefs about the world in which we live.² Thus there is value in investigating the types of messages the media are presenting about nutrition and exercise.

The objective of this pilot investigation is to describe images pertaining to nutrition and exercise in popular movies to determine if there is any basis for concern. This goal is addressed via content analysis. Our primary focus is thus on media content and the implicit messages within – *not* the effects of this content. Studies of media effects should be based on an initial description of the content of nutrition and exercise portrayals. However, investigations of the actual effects of such messages require a different set of tools, such as experimental methods.

The Relationship Between Diet And Cancer

Healthy eating habits can reduce cancer risks. A recent review concluded that increased consumption of fruits and vegetables diminishes the risk of 18 different types of cancer.³ The latest dietary guidelines of the American Cancer Society recommend a plant-based diet rich in fruits and vegetables and low in fat.⁴ Consumption of fruits and vegetables appears to offer protective benefits against a variety of cancers, possibly through micronutrients acting as antioxidants.^{5 6 7}

Some studies explain the differences among various social groups in cancer rates as a consequence of disparities in the consumption of fruits, vegetables, and saturated fat. For example, African American men have the highest cancer incidence of any race/gender group in the U.S.⁸ and the highest rates of prostate cancer in the world,⁹ which could be due in part to this group's higher consumption of saturated fats^{10 11 12} The incidence of many other diet-related cancers is also higher among African Americans than any other U.S. ethnic group.¹³

Epidemiologic research suggests that regular physical activity may also protect against cancer by reducing the likelihood of obesity.¹⁴ The link between regular physical activity and reduced risk of colon cancer is well accepted.¹⁵ However, preliminary research suggests that estrogen-dependent cancers, such as endometrial and ovarian cancers, also may be positively associated with physical activity.¹⁶

The Nature and Effects of Media Portrayals of Nutrition and Physical Activity

The mass media are the primary source of nutrition information for many individuals,¹⁷ and may even play a more substantial role than personal contact for some people.¹⁸ Research on the nature and effects of the electronic media's depictions of nutrition and physical activity will be reviewed. Specifically, we will review in turn research on nutrition and physical activity-related messages found in *television advertising, television entertainment programming, and movies.*

Advertising

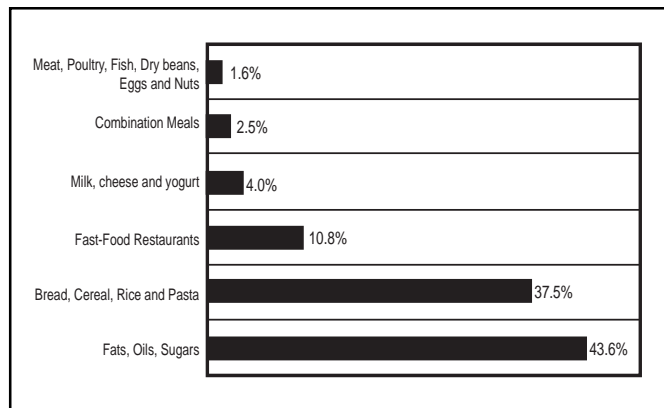
Food Advertising. The vast majority of studies on media messages pertaining to the focus of this investigation have been concerned with food advertising. This is not surprising, given that such advertisements are intentional, focused, persuasive attempts to alter the attitudes and behaviors of consumers. If nothing else, the expenditure of billions of dollars annually on such advertisements by corporations concerned with the “bottom line” evidences the perception among marketing executives that such advertising is effective.

Studies confirm what any casual observer of television has probably already noted: television programming is saturated with food advertisements, and this is especially so for children’s programming. Many, if not a majority, of products advertised on television are for foods.^{19 20 21} For example, Taras and Gage found that the typical hour of children’s programming exposes children to 21.3 commercials, of which 48% were for food items.²² This estimate is consistent with the earlier finding of RajECKI and colleagues, who reported that 40% of children’s programming commercials were for foods,²³ but below the 61% figure reported by Ogletree and colleagues and the estimate of 57% reported by Kotz and Story.²⁴ These results parallel those of a British study that found that half of the television commercials in children’s programming in the United Kingdom were for food items – most typically for breakfast cereals and confectionery snacks.²⁵ Food advertisements are also commonplace in adult-targeted programming.^{26 27}

Food advertisements have typically promoted unhealthy food choices. A study carried out in the 1970s found that 70% of all advertisements directed at children were for fatty, cholesterol-laden foods, and/or sugary foods; this same study reported that a child was 23 times more likely to be exposed to an advertisement for unhealthy foods than an ad for fruits and vegetables.²⁸ More recent investigations suggest that very little has changed. Kuribayashi and colleagues reported that both children’s and prime-time television programming are filled with commercials that are largely for unhealthy foods, with Saturday morning commercials being somewhat more unhealthy.²⁹ Taras and Gage found that more than ninety percent of these food commercials were for products high in fat, sugar, and/or salt. In comparison with earlier analyses, the proportion of commercials for sugary snacks and cereals had declined, whereas the proportion of commercials for processed foods and dairy products had increased. Kotz and Story estimated that 44% of food commercials were for foods high in fat, oil, and sugar (see Figure 1). They conclude: “Commercials broadcast during children’s Saturday morning television programming promote foods predominantly high in fat or sugar, many of which have relatively low nutritional value. As such, the overall picture portrayed to children by the advertising world projects a skewed version of a healthful diet. Fruits and vegetables are virtually nonexistent and many foods high in complex carbohydrates and fiber are seen only minimally. This diet depicted in Saturday morning television programming is the antithesis of what is recom-

mended for healthful eating for children” (p. 1298).

Figure 1: Representation of Foods in Saturday Morning Commercials (Based on Kotz and Story, 1994)



One might hope that the negative messages in such commercials would be countered with public service announcements (PSAs) or other educational approaches promoting healthy eating. Unfortunately, only 0.2% of nonprogram content in children's programming was found in a recent study to be concerned with promotion of healthy food choices among children. A study of more than 50 hours of Saturday morning programming found an average of one nutrition-related PSA for every 5 hours of programming; this translated into 56 food commercials for every nutrition-promoting PSA. Another analysis of a composite day of television programming found *no* PSA that addressed diet or alcohol use.³⁰ Even if PSAs and other forms of pro-nutrition programming were presented often to children, it remains to be seen if such interventions would have a marked impact; to date the results of effects-focused studies have been mixed.³¹

Hope that the effects of advertising on children and adolescents could be mediated by the wise counsel of parents and peers may also be wishful. The evidence suggesting that such mediation can occur is weak and inconsistent.^{32 33} There is a hint in the literature that parents can affect younger children's eating choices more so than the choices of their teenagers.³⁴

Advertising appeals in food products typically "sell" the idea that the product will bring joy and happiness to the child. Features intrinsic to the product itself are rarely emphasized.³⁵ One study found that taste, fun, and free toys were the most common appeals employed in food advertising targeting children (36%, 17%, and 17%, respectively); claims based on the nutritional value of the product were found in less than 3% of advertisements. The association of food with fun is typically accomplished through stories that make use of violence, conflict, trickery, food dependency, and other negative themes.

The majority of studies of exposure to advertising and eating choices has been correlational and has focused on children. These investigations indicate that children tend to select foods and make requests of their parents for foods that are heavily advertised.^{36 37 38 39 40} However, in a study in which adolescents were asked to discuss the factors that affect their food choices, media influences were considered to be comparatively weak. It remains to be seen, however, if people can report accurately the factors that affect their consuming decisions. In a more convincing experimental study, Gold and Goldberg found that when children were exposed to candy commercials they were more likely to choose candy over fruit.⁴¹ Studies also suggest that girls may be more susceptible to televised food commercials than boys,⁴² a vulnerability that may continue into adulthood.⁴³ The capacity of advertising to affect eating choices is also demonstrated by the impact of healthy-eating cereal advertisements on consumer purchases.⁴⁴

Physical Fitness and Advertising. Little research has been reported on the physical activity/fitness messages found in advertising. One issue that has attracted sustained interest, however, is the level of thinness and fitness of advertising models. In a recent review of this research, Kilbourne observes that advertising models in all channels of promotion (including magazines) are typically very slim.⁴⁵ This is true for male and female models, although thin females are especially likely to be over-represented.⁴⁶ For example, 94% of the female characters on programs with a strong junior high school female audience were found in one study to be underweight.

Television Programming

Messages about nutrition and activity in television entertainment programming have received less attention by investigators than advertising messages. It has been argued that television is a significant factor in the "nutrition socialization" of children and teens; it plays a role in the formation of nutrition-related beliefs, attitudes and behaviors.⁴⁷ Studies suggest that 70% or more of high school students perceive television programming of all forms and types to be an important source of nutrition information.^{48 49 50}

Nutritional Practices of Television Characters.

The nutrition messages in entertainment television are largely unhealthy. Television characters routinely make poor food choices that are associated in "the real world" with obesity and disease.^{51 52} Larson found that approximately one-third of food servings in her sample of television programming were of questionable nutrition value. Adult characters were as likely to be portrayed as unhealthy eaters as children.⁵³ For both children and adults, snacks were more frequently consumed than breakfast, lunch, or dinner meals. Moreover, these snacks were usually of poor nutritional quality.

Story and Faulkner analyzed the "prime time diet" and concluded that foods shown in television programs (and embedded commercials) were primarily for low-nutrition items such as sodas, alcohol, coffee, sweets, and salty snack foods.⁵⁴ However, they also recognize that the unhealthy diets shown on television may simply reflect the typical American's diet – one that is "high in sugar, sodium, and fat and low in fruits, vegetables, and fiber." These investigators also note that foods are typically eaten as snacks, not meals, but acknowledge that we have become a nation of snackers. Television may simply be reflecting changes in American eating practices and is not necessarily a cause of those changes.

Other studies support Story and Faulkner's finding that alcohol is a common source of calories on prime-time television^{55 56 57 58} and other entertainment forms, such as soap operas.^{59 60} Futch and colleagues reported that 80% of prime-time programs have at least one alcohol depiction, but noted that alcohol use was largely in line with societal approved manners of consumption.⁶¹ Mathios and colleagues report that alcohol is the most prevalent form of food or drink on prime-time television, being consumed by both adolescents and adults. They note that adolescent drinkers tended to be depicted as having negative personality characteristics.⁶²

Minimal research has been reported on the effects of television programming on viewers' eating practices. However, the work to date suggests some cause for concern. Research indicates, however tentatively, that television viewing is correlated with unhealthy eating habits, high caloric intake, and unhealthy conceptions about nutrition.^{63 64} Studies have shown that children and adolescents who view more television tend to eat more sugary and salty snack items both in the home and while at school.^{65 66} Snacking while watching television is another frequent behavior.⁶⁷ Of course, a correlation between television characters' eating behaviors and television viewers' nutrition-related choices does not establish a cause-effect relationship. Poor eating and television viewing practices could both be effects of deficient parenting, apathy toward fitness, low socio-economic status, and deficiencies in one's innate physical abilities.

Physical Activity and Fitness. As with advertising, more research has been carried out on television programming messages related to nutrition than physical activity. A few generalizations are warranted, however. For instance, investigations of sex role portrayals in television programming suggest that boys are much more physically active in programming than girls, who are typically portrayed as sedentary. It has also been shown that at the same time that obesity has reached epidemic proportions,⁶⁸ overweight and obese children, adolescents, and adults are underrepresented in television programming (as they are in television advertising); overweight females may be especially under-represented.⁶⁹ ⁷⁰ ⁷¹ Ironically, television communicates unhealthy messages likely to promote obesity by using models that are seemingly unaffected by the diets they are shown to consume.

There also appears to be a relationship between television viewing and obesity. With occasional exceptions,⁷² ⁷³ these investigations generally suggest that for all age groups overweight and obese individuals tend to watch more television than thinner people.⁷⁴ ⁷⁵ ⁷⁶ ⁷⁷ ⁷⁸ ⁷⁹ ⁸⁰ ⁸¹ Whether or not this relationship is causal remains to be established. It has been argued that television viewing could lead to obesity by prompting snacking, by encouraging the selection of the kinds of high-caloric foods typically seen on television, and by displacing more physically demanding activities. It is reasonable to argue, however, that individuals who value exercise and healthy lifestyle decisions are less attracted to the sedentary activity of television viewing. Robinson reports the results of a promising intervention that casts some light on the causality question. In a sample of 3rd and 4th graders, reducing levels of media use led to lower adiposity, indicating that television viewing may in fact play a causal role in obesity.⁸² More longitudinal, controlled research is needed on this fundamental question.

The relationship of television viewing with fitness has received less attention. Tucker found that frequent television viewers did poorly, in comparison with less frequent viewers, on a number of fitness measures. It is not clear if television viewing was responsible for lower levels of fitness. Individuals who do not value fitness may

tend to fill their days with passive activities, such as television viewing, video games, reading, and the like. Indeed, while Robinson was able to show that reductions in television viewing among children led to weight loss, this reduction in viewing was not associated with an increase in physical activity or cardiovascular fitness.

At the Movies

To date, virtually all of the studies of nutrition and the media have focused on television entertainment programming and television and print advertising. With the exception of studies documenting the high rate of alcohol use in films, the nutritional and exercise practices of movie characters have been largely ignored.⁸³ Furthermore, we know of no study that has examined exercise-related portrayals in movies in any systematic fashion. We suspect that this is due to two considerations. First, advertising may have received more attention because it is a blatant, targeted attempt to affect people's behavior. In contrast, food and exercise portrayals in film (and television) represent attempts to develop plots and define characters. (There may be reason to believe, however, that product placements in films may become commonplace in the years to come.⁸⁴) Second, television viewing is a much more common activity than in-theatre film viewing.

The present study addresses this gap in the research by examining the nutrition- and exercise-related messages found in popular motion pictures. This emphasis is justified by research suggesting that individuals' nutrition-related behaviors can be affected by motion pictures,⁸⁵ as well as by growing concerns about harmful health messages in movies⁸⁶ ⁸⁷ ⁸⁸ ⁸⁹ and the effects of these messages.⁹⁰ ⁹¹ ⁹²

Research Questions

The present study addresses seventeen research questions that fall into four general categories. The first set of questions asks about the foods that are shown in movies (regardless of whether their consumption is visible to the viewer). Our initial, admittedly informal, observations suggested that when foods are shown in movies they are often used as props. As a result, it is important to distinguish between foods that receive “screen time” and foods that are shown being consumed. Thus, the second set of questions raises issues about what foods are shown being eaten. The third set of questions asks if there is any association between the characteristics of movie characters (gender, age, ethnicity, etc.) and the foods they eat. In particular, we will attempt to assess whether minority and youthful models in movies are more likely to be depicted as unhealthy eaters. Finally, we pose a set of questions directed at describing the extent to which more organized forms of physical activity – i.e., “exercise,” including jogging, gym activities, swimming, planned walking, and playing organized sports – are shown in film.

Representations of Food in Popular American Films

- RQ1: What types of foods are portrayed in popular movies, and with what frequency?
- RQ2: How does the distribution of foods shown compare with the Food Guide Pyramid recommendations?
- RQ3: When food is shown, is it represented as part of a meal or as a snack?
- RQ4: What is the range of brand name foods portrayed in film?
- RQ5: Does the representation of food in the movies vary as a function of movie rating?
- RQ6: How often does food appear in film relative to alcohol?

Representations of Eating in Popular Films

- RQ 7: When a food is present in film, how often is it eaten?
- RQ8: Is there any association between the type of food portrayed and the likelihood it will be consumed?
- RQ9: Does the consumption of food vary as a function of movie rating?
- RQ10: When a human movie character eats food, is that person’s personal reaction (expressed verbally or nonverbally) to the food positive, negative, or neutral.
- RQ11: When a human movie character eats a food in the presence of others, does that person receive positive, negative, or neutral social support (expressed verbally or nonverbally) for his/her consumption of that item?

Actors and the Foods They Eat

- RQ12: What is the relationship of types of foods consumed with character gender (male/female), age (child/adolescent/adult), race (white/nonwhite), SES (low/moderate/high), and body type (underweight, average, overweight, obese)?

Representations of Exercise in Popular Films

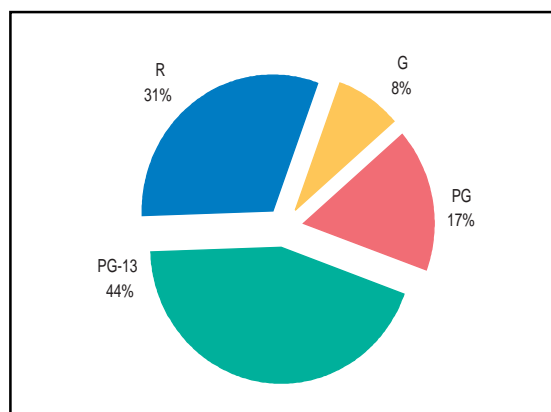
- RQ13: How often are sports and other forms of planned fitness depicted in movies?
- RQ14: Is there any association between movie rating category and the intensity of exercise portrayed?
- RQ15: Is there any association between the intensity of exercise and character demographics (sex, age, ethnicity, and SES)?
- RQ16: When a human character engages in a fitness activity, is that person’s personal reaction (expressed verbally or nonverbally) to that activity positive, negative, or neutral?
- RQ17: When a human character engages in a fitness activity in the presence of others, does that person receive positive, negative, or neutral social support for exercising (expressed verbally or nonverbally)?

Methods

Sample of Films

The population of films was defined as the top-ten grossing films in each of the ten years from 1991 through 2000 (N=100 films). The films are listed in Appendix A. The distribution of film ratings is as follows: 25% of these films were G or PG, 44% were rated PG-13, and 31% were rated R (see Figure 2). No instances of NC-17 films appeared on the 100-film list. We selected the top-ten grossing films in an effort to analyze the movies most likely to have a wide range of appeal to the general public. It was not possible to select films that appeal to certain income or ethnic groups that have higher rates of risk behaviors or higher rates of certain cancer because no source of movie-specific demographic information for viewers is available.

Figure 2: Number of Top-Grossing Movies by Rating, 1991-2000



Rating	Description
G	General Audiences: All ages admitted
PG	Parental Guidance Suggested: Some material may not be suitable for children.
PG-13	Parents Strongly Cautioned: Some materials may be inappropriate for children under 13.
R	Restricted: Under 17 requires accompanying parent or adult guardian.
NC-17	No One 17 and Under Admitted

Source: Motion Picture Association of America (<http://www.mpa.org/movieratings>, as accessed on July 16, 2001.

Content Analysis Methods

Standard content analytic procedures were used to answer the proposed research questions.⁹³ Investigators developed the content categories inductively, based on the research questions outlined above.

Analysis of Food Portrayals

Unit of Analysis. The research questions require that two distinct units of observation be extracted from the sampled films: the “food item” (a distinct presentation of an edible food or alcohol) and the “food consuming character” (any character who is portrayed consuming the food or drink). A coding form (see Appendix B) was completed for each item that met our eligibility requirements (described below), in accordance with the following rules: (1) A form was completed for each single-ingredient item (such as an apple or slice of bread). (2) A form was completed for an amalgamation of ingredients that collectively form a single food entity (e.g., a slice of apple pie or a sandwich). (3) A form was completed for any food item being shown added to another food. (For example, if a character is being shown adding dressing to a salad, complete a form for the salad and a form for the dressing.) Thus, the coding of a single scene could generate anywhere from zero to many food item reports.

The process can be made more concrete with an example: A character is eating from a plate that includes a salad, a sandwich, a side of carrots, a slice of cake, and a glass of milk. Five food item report forms would be used for this situation: one for the salad, one for the sandwich, one for the carrots, one for the cake, and one for the glass of milk.

Foods were coded only if the criteria outlined in the flow chart reproduced in Appendix C were satisfied. Specifically, a food item was coded if one of the following conditions was met:

The item was ingested by a human character; or

The item (while not ingested) was being ordered, bought, or in anyway acquired by a human character; or

The item, while not being ingested or in the process of being acquired, was being held, prepared, or in immediate proximity to a human character.

A separate report was completed for each character shown eating the food item in question. Specifically, coders made judgments of the character's gender, age, social-economic status, race, and body type. They also rated the nature of any personal and social evaluations that were made about the food choice. When the food was alcohol a rating of the sobriety of the character was made.

"Ingestion" was defined as the deliberate consumption by mouth of food or drink; nutrients delivered via needle or other means would thus not be coded. "Human character" was defined to include characters played by real human beings or animated human characters (such as Tarzan). When dealing with a character who is human for only part of the movie, only those incidents that occurred when the character was in a human state were coded. Characters with supernatural powers that were nevertheless human in every other way were treated as human for the purpose of coding.

Classifications. The nutrition and character demographics variables identified in the research questions outlined earlier are defined in Table 1. Foods represented in these films were described in as much detail as possible and then classified later into six categories based on the food pyramid and the work of Story and Faulkner (see Table 2). These categories are as follows: Fats, Oils, Sweets; *Milk, Yogurt, Cheese; Meat, Poultry, Fish, Dry Beans, Eggs, Nuts; Vegetables; Fruits; Bread, Cereal, Rice, Pasta.* The following additional categories were added to the scheme to ensure coding exhaustiveness: *Miscellaneous* (diet beverages, coffee, tea, condiments, salt, seasonings, noncaloric sweeteners; *Unclassifiable* (unidentifiable or combination entrees that encompass multiple food groups).

Table 1: Variable Descriptions for the Food Item Reporting Form

Variable	Instructions
Movie ID#	Enter three-digit number assigned to this movie (range: 001-100)
Movie Title	Jot down the movie's title.
Temporal Location of Incident on Film	The temporal location on the film where the incident begins. Specifically, note the hour, minute, and second when the event begins (e.g., 0 hours, 14 minutes, 44 seconds).
Duration	Using a stopwatch, assess the amount of time (in seconds) that the food item appears on the screen in this incident. If a duration exceeds one minute, convert the duration into seconds (e.g., 1 minute, 20 seconds should be reported as 80 seconds).
Describe Food Item	Describe the food item being coded. (Examples: "pasta dish—ingredients cannot be determined"; "sandwich, white bread, with cheese and ham"; "glass of red wine"; etc.)
Branding of Food Item	<p>A "brand name" is a commercial trademark for a food item (e.g., Coca Cola, Pepsi, Big Mac, Snickers, Jiffy peanut butter) OR the producer of that food item (e.g., McDonalds, Taco Bell).</p> <ul style="list-style-type: none"> • Check "yes" if a brand name is shown (e.g., you can see "Milky Way" on a candy bar wrapper) or if a brand name is mentioned (e.g., "I would like to buy a 'Milky Way,' sir." Write down the name of the brand. • Check "no" if no brand name is present.
Physical Setting	<p>Where is the character located? Select one category from the following lists of physical settings:</p> <ul style="list-style-type: none"> • <i>Domestic Setting</i>. a house, apartment, condo, mobile home, tee-pee, hotel room, or other living situation. • <i>Business Setting</i>. office, conference room, and the like • <i>Restaurant</i>. any eating establishment, including banquet settings. • <i>Outdoors</i>. any outside setting not attached to a home, business, or restaurant. (Code home patios and yards as "domestic" and restaurant outdoor seating as "restaurant.") • <i>Transport</i>. inside a car, truck, bus, plane, train, spaceship, etc. • <i>Extraterrestrial</i>. Food is eaten in a location in space or on another planet. • <i>Undeterminable</i>. Setting is so ambiguous that an educated guess is not possible • <i>Other</i>. Any setting not described above.

Table 1: Variable Descriptions for the Food Item Reporting Form (cont.)

Variable	Instructions
Ingestion	<p>Consider a food item to have been ingested if...</p> <ul style="list-style-type: none"> • the character is shown putting the food into his/her mouth; OR • is shown to be chewing the food; OR • if trace evidence of consumption is presented, such as food around the character's mouth or the licking of food off the character's lips.
Snack/Meal	<p>Code this variable ONLY IF the food was ingested.</p> <ul style="list-style-type: none"> • <i>Snack</i>: food item is eaten between meals or in lieu of a meal. • <i>Meal</i>: food item is eaten in a situation that fits conventional definitions of "breakfast," "lunch," or "dinner." • <i>Undeterminable</i>: no determination can be made.
Alcohol Type	<p>If the food item is alcohol, indicate by checking if it is <i>beer</i>, <i>wine</i>, <i>liquor</i>, or <i>undeterminable</i>. Code wine coolers and champagne as wine. Hard liquor includes scotch, gin, vodka, whiskey, and the like. Any drink that consists in part of hard liquor should be coded as "liquor" (e.g., Long Island Ice Tea).</p>
Anecdotes	<p>Simply describe any scene that might add color to our report – candy bars being used as rewards or punishments, characters turning down food for alcohol, acts of gluttony, cases of anorexia nervosa, etc.</p>
Character Name/Description	<p>Write down the name of the character or a description of the character for whom no name is given.</p>
Sex	<p>Indicate if the character is a male or female</p>
Age	<p>Estimate the age of the character in years. Use months for infants.</p>
SES1/Affluence	<p>Socio-economic status/affluence. Rate the level of wealth of the character as follows:</p> <ul style="list-style-type: none"> • Low income: poor or of modest means. • Middle income: average/typical level of wealth. • Upper income: above average affluence • Undeterminable: No basis for judging the affluence level of the character. <i>Note</i>: If character is a child or adolescent, code based on the apparent wealth of the character's family.

Table I: Variable Descriptions for the Food Item Reporting Form (cont.)

Variable	Instructions
SES2/Education	<p>Socio-economic status/Educational Achievement</p> <ul style="list-style-type: none"> • <i>Educated</i>: the character is said to hold a college degree or the character is employed in an occupation requiring a college degree or the character is portrayed in a manner that invites the inference that s/he is educated • <i>Lesser Educated</i>: the character is involved in a blue collar profession or any profession that does not require advanced training. Check off “lesser educated” if the character is portrayed in a manner that invites the inference that s/he has not received formal education beyond the high school level. • <i>Not Applicable</i>: Select this option if the character is a child, adolescent, or college student. • <i>Undeterminable</i>: Select this option if the character’s educational achievement cannot be assessed.
Race	Ethnicity of the Character. Check the category that best describes this character.
Body Type	<p>Evaluate the level of obesity of the Character at the time the food item is being ingested.</p> <ul style="list-style-type: none"> • <i>Underweight</i>: Character is thin. • <i>Average Weight</i>: Character is neither underweight nor overweight. • <i>Overweight</i>: Character is “chubby,” “plump,” “stocky.” • <i>Obese</i>: Character is “fat.”
Personal Evaluation	<p>The character’s reaction to the food s/he has ingested:</p> <ul style="list-style-type: none"> • <i>Positive (+)</i>: Character indicates verbally or nonverbally that the food item is <u>liked</u>. • <i>Neutral (0)</i>: Character makes no verbal or nonverbal evaluation of the food item. • <i>Negative (-)</i>: Character indicates verbally or nonverbally that the food item is <u>disliked</u>.
Social Evaluation	<p>Other characters’ evaluation of the ingesting character’s food choice</p> <ul style="list-style-type: none"> • <i>Positive (+)</i>: Other character(s) shows approval verbally or nonverbally of the ingesting character’s food choice. • <i>Neutral (0)</i>: Other character(s) make no evaluation of the ingesting character’s food choice. • <i>Negative (-)</i>: Other character(s) shows disapproval verbally or nonverbally of the ingesting character’s food choice. • <i>Alone</i>: No other characters are present.
Intoxication (If alcohol)	<p>Code only if the food item is alcohol. Rate the intoxication level of the character:</p> <p>1=sober 2=tipsy (modestly intoxicated) 3=drunk</p>

Table 2: Classification Of Depicted Foods

Group	Description	Code
I	FATS, OILS, SWEETS GROUP	
	Butter, margarine, oils, cream, gravy, dressings, other fats	11
	Sweets	
	sugar, honey	12
	cakes, cookies, pies, donuts, sweet rolls, other pastries	13
	candies (including chocolate)	14
	ice cream desserts	15
	sweetened sauces, gelatins, jams, jellies, puddings	16
	sugary cereals	17
	soda and other sweetened soft drinks and beverages	18
	Popped or Fried Snacks (chips, popcorn)	19
II	MILK, YOGURT, AND CHEESE GROUP	
	Milk, Yogurt	21
	Cheese	22
	Chocolate milk (hot or cold), milk shakes	23
III	MEAT, POULTRY, FISH, DRY BEANS, EGGS, NUTS GROUP	
	Meat	31
	Poultry	32
	Fish and seafood	33
	Beans (excluding green beans)	34
	Eggs 35	
	Nuts 36	
IV	VEGETABLE GROUP (solid or juices)	40
V	FRUIT GROUP (solid or juices)	50
VI	BREAD, CEREAL, RICE, AND PASTA GROUP	
	Bread, rolls, pretzels, bagels, crackers, etc.	61
	Granola, oatmeal, natural unsweetened cereals	62
	rice	63
	pasta	64
	grain flours	65
	whole grains (excluding rice): corn, barley, wheat, etc.	66
VII	MISCELLANEOUS	
	Low Caloric Beverages	
	water	71
	diet soda	72
	coffee/tea	73
	condiments	74
	salt, pepper, spices, herbs	75
	Noncaloric sweeteners	76
VIII	ALCOHOL	80
IX	UNCLASSIFIABLE	
	Nondescript or hidden foods, beverages, packaged/canned/bottled foodstuffs	91
	Combination entrees (e.g., pizza, sandwiches, hot dogs w/ buns, casseroles, ambiguous soups and stews, etc.).	92

Analysis of Exercise Portrayals

This pilot study focused upon *exercise* behavior, not the broader concept of total physical activity. This decision was based on level of resources available to us. The coding of movie characters for their levels of total energy expenditure would have required that the behavior of every character be analyzed on an ongoing basis, throughout the entire duration of the movie. As a result, we examined the narrower construct of the “exercise incident,” and did so for focal characters alone.

Unit of Analysis. An Exercise Report Form (Appendix D) was completed for an “exercise incident” if the following criteria were satisfied:

- The behavior in question was that of a Focal Character, defined as any human (real or animated) character who is central to the story of the movie or who is the visual focus of a scene. When dealing with a character who is human for only part of the movie, only those incidents were eligible for coding when the character was in a human state. Characters with supernatural powers who were nevertheless human in every other way were treated as human for the purpose of coding; AND
- The behavior in question was an individual or team sport OR the character was engaged in a nonsport fitness activity for the express purpose of enhancing his/her fitness level, reducing his/her stress, treating a medical condition, or preventing a medical condition.

Thus, an Exercise Report Form would not have been completed for a focal character running out of a burning building, but would have been completed for a jogging focal character. Walking or climbing stairs would not generally have been coded, but an incident in which a character stated that s/he was walking to lose weight or improve fitness would have been coded. The process of eligibility determination was formally outlined in the flow chart found in Appendix E.

As with the Food Report Form, a separate evaluation of the character’s sex, race, age, social-economic status, and body type for every focal character engaged in the exercise activity. In addition, any personal or social evaluations made of the activity were rated. (See Table 3 for variable descriptions and categories.)

Table 3: Variable Descriptions for the Exercise Report Form

Variable	Instructions
Movie ID#	Enter three-digit number assigned to this movie (range: 001-100).
Movie Title	Jot down the movie's title.
Temporal Location of Incident on Film	The temporal location on the film where the incident begins. Specifically, note the hour, minute, and second when the event begins (e.g., 0 hours, 14 minutes, 44 seconds).
Duration	Using a stopwatch, assess the amount of time (in seconds) that the exercise appears on the screen in this incident. If a duration exceeds one minute, convert the duration into seconds (e.g., 1 minute, 20 seconds should be reported as 80 seconds).
Describe Exercise	Describe the activity being coded as exercise. (Examples: "Captain Jones jogs in park"; "Sally on treadmill in gym.")
Exercise Code	Write down the two-digit code for this activity.
Fitness Attribution	Check off "yes" if the character says that the activity is being undertaken for exercise, stress reduction, weight-loss, muscle-gain, fitness, to prevent disease, to treat disease, or to prevent or treat an injury. Check off "no" otherwise.
Character Name/Description	Write down the name of the character or a description of the character for whom no name is given.
Sex	Indicate if the character is a male or female
Age	Estimate the age of the character in years. Use months for infants.
SES1/Affluence	Socio-economic status/affluence. Rate the level of wealth of the character as follows: <ul style="list-style-type: none"> • Low income: poor or of modest means. • Middle income: average/typical level of wealth. • Upper income: above average affluence • Undeterminable: No basis for judging the affluence level of the character. <i>Note:</i> If character is a child or adolescent, code based on the apparent wealth of the character's family.

Table 3: Variable Descriptions for the Exercise Report Form (cont.)

Variable	Instructions
SES2/Education	<p>Socio-economic status/Educational Achievement</p> <ul style="list-style-type: none"> • <i>Educated</i>: the character is said to hold a college degree or if the character is employed in an occupation requiring a college degree or if the character is portrayed in a manner that invites the inference that s/he is educated • <i>Lesser Educated</i>: the character is involved in a blue collar profession or any profession that does not require advanced training. Check off “lesser educated” if the character is portrayed in a manner that invites the inference that s/he has not received formal education beyond the high school level. • <i>Not Applicable</i>: Select this option if the character is a child, adolescent, or college student. • <i>Undeterminable</i>: Select this option if the character’s educational achievement cannot be assessed.
Race	Ethnicity of the Character. Check the category that best describes this character.
Body Type	<p>Evaluate the level of obesity of the Character at the time the food item is being ingested.</p> <ul style="list-style-type: none"> • <i>Underweight</i>: Character is thin. • <i>Average Weight</i>: Character is neither underweight nor overweight. • <i>Overweight</i>: Character is “chubby,” “plump,” “stocky.” • <i>Obese</i>: Character is “fat.”
Personal Evaluation	<p>The character’s reaction to the food eaten</p> <ul style="list-style-type: none"> • <i>Positive (+)</i>: Character indicates verbally or nonverbally that the food item is <u>liked</u>. • <i>Neutral (0)</i>: Character makes no verbal or nonverbal evaluation of the food item. • <i>Negative (-)</i>: Character indicates verbally or nonverbally that the food item is <u>disliked</u>.
Social Evaluation	<p>Other characters’ evaluation of the ingesting character’s food choice</p> <ul style="list-style-type: none"> • <i>Positive (+)</i>: Other character(s) shows approval verbally or nonverbally of the ingesting character’s food choice. • <i>Neutral (0)</i>: Other character(s) make no evaluation of the ingesting character’s food choice. • <i>Negative (-)</i>: Other character(s) shows disapproval verbally or nonverbally of the ingesting character’s food choice. • <i>Alone</i>: No other characters are present.

Classifications. The variables identified in the research questions related to exercise behavior are defined in Table 3. The exercise activities identified in this table were subsequently reclassified into three categories: light, moderate, and vigorous intensity level, based on the work of Ainsworth and colleagues.⁹⁴

Coding Procedure

Two undergraduates were trained by the investigators to apply the coding instrument and procedures. Coders spent 5-10 hours watching each film and recording all instances of eating and intentional fitness activity. One-third of films were double-coded by the coders to assess the reliability (inter-judge agreement) of their unit identification and classification decisions. One of the authors arbitrated coding disagreements.

Data Analyses

Coding reliabilities were assessed with Cohen's kappa (k). Research questions concerning the absolute and relative frequency of portrayals were addressed using basic descriptive statistics (frequencies, percentages, rates). In most analyses, associations among variables were examined using the Stata 6.0⁹⁵ svytab procedure to correct for the clustering of exercise and food depictions within movies. The svyprop command was used to make the same correction when estimating proportions. In these analyses, the movie was treated as the primary sampling unit (PSU). In several analyses, the movie was treated as the unit of analysis by aggregating across events within each movie to create count and rate variables (for example, vegetable appearance per hour).

Results

Reliabilities

Coders agreed in their independent identification of food and exercise / sport episodes 84% and 79% of the time, respectively. Kappa reliabilities for their classification of these events is reported in Table 4. Using qualitative interpretations for kappa offered by Landis and Koch,⁹⁶ reliabilities were “almost perfect” for several of the more transparent variables (e.g. whether a brand was present or a food item was eaten; and the sex, age and race of the character). Most variables were

coded with “moderate” to “substantial” agreement. The distinction between a meal and a snack was problematic for coders; this variable will not be assessed further due to its low reliability. The reliabilities for the Personal and Social Evaluation variables were also low, due primarily to a near-absence of variability. Essentially, evaluations by self and others of food and exercise decisions were so infrequent that the kappa values reported for these variables are largely meaningless.

Table 4: Reliabilities

Variable	Kappa	Interpretation*
<i>Nutrition Variables</i>		
<i>Branding</i> .....	.81	<i>almost perfect</i>
<i>Physical Setting</i> .....	.78	substantial
<i>Ingestion</i> .....	.91	almost perfect
<i>Snack/Meal</i> .....	.19	slight
<i>Alcohol Type</i> .....	.77	substantial
<i>Exercise Variables</i>		
<i>Exercise/Sport Classification</i> .....	.81	<i>almost perfect</i>
<i>Fitness Attribution</i> .....	.58	moderate
<i>Character Profile Variables</i>		
<i>Sex</i> .....	.95	<i>almost perfect</i>
<i>Age</i> .....	.84	almost perfect
<i>Social Class</i> .....	.52	moderate
<i>Education</i> .....	.49	moderate
<i>Race (White versus Nonwhite)</i> .....	.83	almost perfect
<i>Body Type</i> .....	.79	substantial
<i>Personal Evaluation</i>	-.02	poor**
<i>Social Evaluation</i> .....	.10	poor**

*These quality assessments are based on the guidance offered by Landis and Koch (1977).

** Not meaningful, due to lack of variance in the variable in question.

Research Questions

Representations of Food in Popular American Films

The first research question asked, “What types of foods are portrayed in popular movies, and how often do they appear?” This question is addressed in Table 5. The most common identifiable category of food portrayed was alcohol (all types,

20.2% of food events), followed by coffee and tea (12.3%), water (7.7%), fruits (6.2%), vegetables (5.5%), and combination entrees (e.g., pizza, casseroles, soups, sandwiches, 4.7%). In total, a food item appeared on the screen once every 4.2 minutes.

Table 5: Distribution of Food Portrayals in Popular Films, Sorted By Prevalence of Depictions

Group	n	%
Alcohol	578	20.2
Undeterminable: Unclear or concealed foods, beverages	397	13.8
Coffee/Tea	352	12.3
Water	222	7.7
Fruits	179	6.2
Vegetables	156	5.5
Combination Entrees: pizza, sandwiches, burgers, hot dogs w/ buns, casseroles, ambiguous soups and stews, etc.)	134	4.7
Breads: bread, rolls, pretzels, bagels, crackers, etc.	119	4.2
Confectionary Baked Goods: Cakes, cookies, pies, donuts, sweet rolls, other pastries	118	4.1
Sugared Drinks: Soda and other sweetened soft drinks and beverages	93	3.2
Meats: Beef, lamb, pork, etc.	72	2.5
Milk, Yogurt.....	46	1.6
Fish and seafood.....	46	1.6
Candies (including chocolate)	43	1.5
Popped or Fried Snacks (chips, popcorn)	40	1.4
Fats and oils	35	1.2
Seasonings: Salt, pepper, spices, herbs	29	1.0
Condiments: Ketchup, mustard, hot sauces, etc.	25	0.9
Poultry ²³	0.8	
Eggs ²³	0.8	
Nuts ²⁴	0.8	
Sugar (including honey)	17	0.6
Sweetened sauces, gelatins, jams, jellies, puddings	18	0.6
Grains: Rice and other grains and grain flours.....	18	0.6
Ice cream desserts	14	0.5
Pasta	15	0.5
Granola and natural unsweetened cereals	8	0.3
Sugary cereals	5	0.2
Cheese	5	0.2
Noncaloric sweeteners	5	0.2
Dry beans.....	3	0.1
Pancakes, waffles, French toast	2	0.1
Diet sodas	3	0.1
	2867	100.0%

Approximately 13.8% of portrayals were for items that were hidden or not shown clearly enough to allow for identification. Among those items that could be classified, many were identified in the most general of ways (e.g., “some sort of fruit,” “hot coffee or tea,” “a green vegetable of some kind,” “casserole–not sure what type,” “soup, type unknown,” “pizza – toppings not clear”). Many food incidents were fleeting and could be coded only by repeated viewing of the scene or by pausing the film. Coders needed to forward through the film before and after coding to extract food appearance before watching the movies because we found that they often omitted events when watching the movie “naturally.” This, we believe, was because food is typically part of the “background” – a prop – not the focus of most scenes.

The second question asked how the distribution of the foods shown compares with the food guide pyramid recommendations. We aggregated the categories shown in Table 5 into the groups identified in the pyramid: (1) Bread, Cereal, Rice, Pasta; (2) Vegetables; (3) Fruits; (4) Meat, Poultry, Fish, Dry Beans, Eggs, Nuts; (5) Milk, Yogurt, Cheese; and (6) Fats, Oils, Sweets. Table 6 reports the frequency with which each of these groups was portrayed in the films. The most frequent food group was the Fats, Oils, and Sweets group, followed by the Meat, Poultry, Fish, Dry Beans, Eggs, Nuts Group; the Fruits Group; the Bread, Cereal, Rice, Pasta Group; the Vegetables Group; and the Milk, Yogurt, Cheese Group. The last column in Table 6 expresses these frequencies as rates of occurrence per hour of movie time. For example, viewers of these movies could expect to see a fat, oil or sweet a little less than twice an hour.

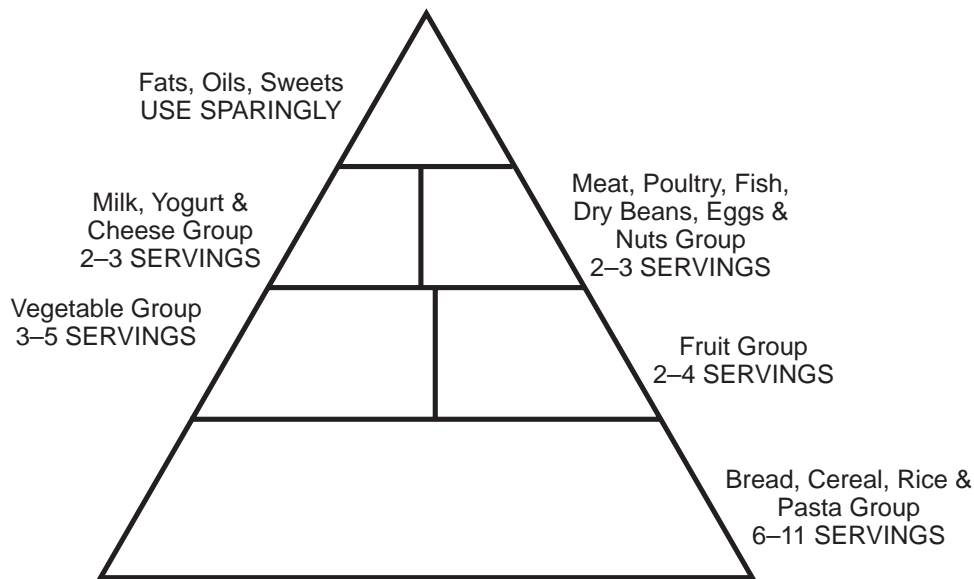
Table 6: Prevalence Of Food Representations in Popular Films, Aggregated By Food Pyramid Categories

Food Group	Frequencies		
	n	%	Rate/Hour
Fats, Oils, Sweets	383	34.1	1.93
Meat, Poultry, Fish, Dry Beans, Eggs, Nuts	191	17.0	0.96
Fruits	179	16.0	0.90
Bread, Cereal, Rice, Pasta	162	14.5	0.81
Vegetables	156	13.9	0.78
Milk, Yogurt, Cheese	51	4.5	0.26
Totals:	1122	100.0%	5.64

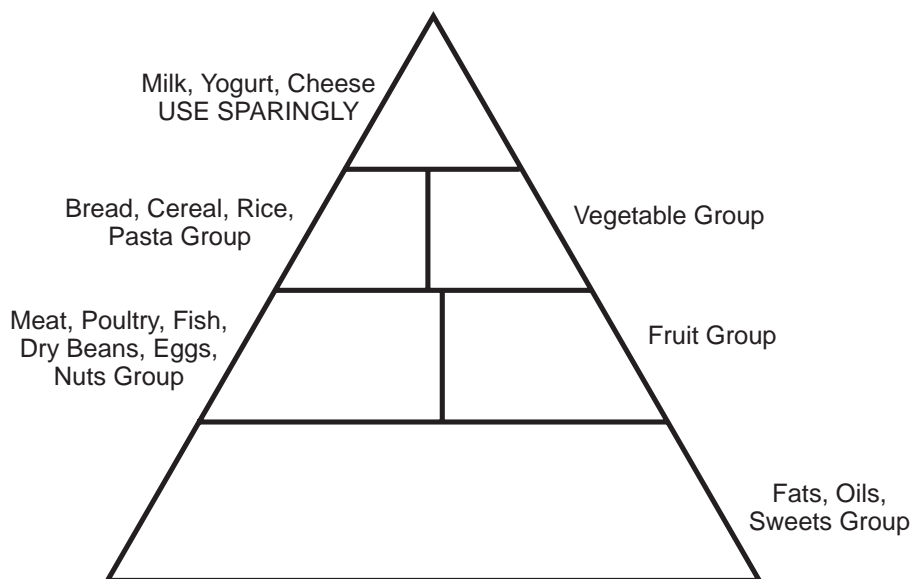
This analysis excludes non-food group cases, such as alcohol, water, diet sodas, coffee, and tea. Also excluded are portrayals that could not be classified due to the ambiguous or hidden nature of the food item and combination entrees.

Figure 3 juxtaposes the Food Guide Pyramid with what we have dubbed the *Food Movie Pyramid*. If food portrayals in film were prescriptive, we would be advised to eat plenty of fats, oils, and sweets, and to use milk and other dairy products sparingly.

Figure 3: The Food and Movie Pyramids



The Food Pyramid



The Movie Food Pyramid

Third, we asked if food is typically represented as part of a meal or as a snack. This question could not be addressed due to the difficulty of determining reliably if a food was being consumed between meals or as part of a meal. In many situations, eating was done “on the run” with no contextual information provided about the timing of consumption.

The fourth research question addressed the range of brand name foods portrayed in film. A total of 141 (4.9%) of the food incidents were for a branded item. This translates into a rate of approximately 0.71 branded food appearances per hour. As reported in Table 7, a majority (53.3%) of branded food products fell into just two categories, soda and beer. Three-quarters of branded items fell into four categories: soda, beer, candy, and chips/pretzels, and candy. Likewise, We have no way of knowing if the brands identified were present due to paid product placement.

Approximately 28% of branded food items were ingested, compared with 26% for nonbranded items – a difference that was not statistically significant ($p=.72$). For alcohol, 55% of branded items were consumed, in contrast with 41% for nonbranded alcohol products, a difference that was not significant ($p=.09$). The likelihood of an ingested food or alcohol item being branded was unrelated to the ingesting character’s attributed sex, age, race, social class, education level, or body type (all p values $> .64$), or to the rating of the movie in which the incident appeared ($p=.56$).

Table 7: Frequency of Branded Foods Grouped By Food Category

Category	n	%
Soda	45	31.9
Beer	28	20.0
Candy	11	7.8
Chips, Pretzels	10	7.1
Liquor	10	7.1
Cookies and Crackers	6	4.3
Nutrition Drinks/Bars	4	2.8
Cereal	3	2.1
Coffee	3	2.1
Pizza	3	2.1
Burgers	2	1.4
Champagne	2	1.4
Condiments	2	1.4
Confectionary Baked Goods	2	1.4
Juice	2	1.4
Water	1	0.7
Miscellaneous (1 incident)	7	5.0
	141	100.0%

The fifth research question concerns whether the foods portrayed in movie vary as a function of movie rating. This issue was addressed via the svytab procedure of the Stata 6.0 program, using movie as the primary sampling unit. Only those “pure” food items that fell into just one of the six

food groups were analyzed ($n=1122$); food in the “miscellaneous,” “alcohol,” and “unclassifiable” (including combination dishes) categories were excluded from the analysis. The distribution of foods shown did not vary as a function of movie rating ($p=36$; see Table 8).

Table 8: Association Between Food Type and Movie Rating

FOOD GROUP	RATING				
	G	PG	PG13	R	TOTAL
Fats, Oils, Sweets	25.6% ($n=11$)	33.3% ($n=75$)	33.5% ($n=178$)	37.0% ($n=119$)	34.1% ($n=383$)
Milk, Yogurt, Cheese	0.0% ($n=0$)	7.6% ($n=17$)	4.1% ($n=22$)	3.7% ($n=12$)	4.5% ($n=51$)
Meat, Poultry, Fish, Dry Beans, Eggs, Nuts	20.9% ($n=9$)	17.3% ($n=39$)	20.1% ($n=107$)	11.2% ($n=36$)	17.0% ($n=191$)
Vegetables	2.3% ($n=1$)	15.6% ($n=35$)	14.5% ($n=77$)	13.4% ($n=43$)	13.9% ($n=156$)
Fruits	20.9% ($n=9$)	13.8% ($n=31$)	14.3% ($n=76$)	19.6% ($n=63$)	16.0% ($n=179$)
Bread, Cereal, Rice, Pasta	30.2% ($n=13$)	12.4% ($n=28$)	13.5% ($n=72$)	15.2% ($n=49$)	14.4% ($n=162$)

The sixth research question asked how often food appears in films relative to alcohol. Approximately 79.8% of the food events involved non-alcoholic items; 20.2% involved alcoholic beverages. The standard error of estimate, using the Stata 6.0 svyprop command, with movie serving as the PSU, was 0.129.

Representations of Eating in Popular Films

Moving our attention to ingestion, the seventh research question asks, How often food items presented on the big screen are actually ingested? In most instances, foods were not consumed; only 26.5% were ingested by the character. In contrast, when alcohol appeared on the screen it was consumed in 42.4 percent of cases. This difference, assessed with the svytab command, was statistically significant ($p=.0001$).

The eighth research question asked if there was any association between a food’s category on the food guide pyramid (as shown in Table 2) and its likelihood of being consumed. The association between food category and consumption was assessed using the svytab procedure, excluding from analysis the categories “miscellaneous,” “alcohol,” and “unclassifiable.” A significant association was found ($p=.024$; see Table 9). Foods in the Fats, Oils, Sweets Group and the Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group were most likely to be consumed on screen; dairy products and vegetables were least likely to be shown being consumed.

Table 9: Association Between Food Categories and Consumption

Food Category	% of Events In Which Food Item Was Consumed	95% CI
Fats, Oils, Sweets Group	30.1	25.2, 36.0
Meat, Poultry, Fish, Dry Beans, Eggs, Nuts Group	29.8	23.0, 37.7
Bread, Cereal, Rice, and Pasta Group	24.1	16.4, 33.8
Fruits Group	22.9	16.7, 30.6
Vegetables Group	16.7	10.0, 26.4
Milk, Yogurt, Cheese Group	15.7	8.9, 26.1

Note: Cross-tabulation based on Stata svytab procedure, correcting for the clustering of food events within movies; $p=.024$.

The ninth research question asks if there was any association between the rating of the movie in which a food item appeared and its likelihood of being consumed on screen. The general tendency was for the rate of food consumption to increase as movies become more suitable for adults ($p=.011$, see Table 10). More precisely, PG movies were significantly less likely than PG-13 and R-rated movies to show the consumption of food.

Table 10: Association Between Movie Rating and Consumption

Movie Rating	% of Food Items Consumed	95% CI
G	22.8	15.1, 32.9
PG	18.9	13.7, 25.5
PG-13	26.0	22.2, 30.2
R	31.8	26.3, 37.7

Note: Cross-tabulation based on Stata svytab procedure, correcting for the clustering of food events within movies; design-based $F(2.49, 241.09) = 4.16$, $p = 0.011$.

The tenth research question asked about the distribution of movie characters' personal reactions to consumed foods, expressed verbally or nonverbally. Recall that this variable was not coded reliably, due primarily to the near-absence of variation in it. Specifically, in the vast majority of cases, judges saw no evaluation given (98.9% of cases); a positive reaction was given in 0.7% of cases and a negative reaction was given in 0.4% of cases. Movie characters rarely evaluate, for better or worse, the foods they consume. Likewise, movie characters are rarely evaluated by others for their food choices (RQ 11). A social evaluation of any kind was reported in only 0.1% of cases. (Of course, a character's decision to eat a particular food could be assumed by viewers to give tacit approval of the item in question.)

The svytab procedure was used to address RQ12, which addressed the relation of the types of foods consumed to character gender (male versus female), age (child/adolescent versus adult), race (white/nonwhite), social class (low versus moderate versus high), and education (lesser educated versus higher educated). The age variable was dichotomized at age 18 (age 18 and under versus adults) because there were too few young people to distinguish between children and adolescents. Nonwhite characters were aggregated into a single group because there were too few characters from individual racial/ethnic groups to make additional comparisons possible (88.5% of characters were White). For the analysis of social class,

cases in which the socio-economic status of the character could not be judged (19% of cases) were excluded from the analysis. Likewise, education was assessed only for those characters who were judged to be “lesser” or “more” educated; those whose educational background could not be assessed or who were pre-adults were not included in the analysis (29.8% of cases). After correcting for the clustering of eating events within movies, we found no association between the food category of the item being consumed and any of the variables in question (all p values > .263). Thus, demographic profile was not associated with characters’ eating practices.

In contrast, the findings for body type were significant. The vast majority of characters were classified as having an “average” or “overweight” body type; “underweight” and “obese” characters were rare. We thus contrasted underweight and average body type characters with those who were overweight or obese. As shown in Table 11, overweight/obese characters were more likely to be shown consuming foods in the Fats, Oils, Sweets group and the Meat, Poultry, Fish, Dry Beans, Eggs, Nuts Group; thin/average weight characters were more likely to be depicted as consumers of fruits. Only 13.1% of characters were judged to be overweight or obese. This finding is in line with earlier research suggesting that overweight individuals are underrepresented in print and television advertising, as well as in television programming.

Table II: Association Between Character Body Type and Food Consumption Patterns

Food Group	Thin/Average Body Type		Overweight/Obese Body Type	
	% of Characters	95% C.I.	% of Characters	95% C.I.
Fats, Oils, Sweets	37.1	29.4, 45.5	50.8	38.2, 63.3
Milk, Yogurt, Cheese	2.9	1.3, 6.2	0.0	(0)
Meat, Poultry, Fish, Dry Beans, Eggs, Nuts	17.8	12.8, 24.3	28.6	18.4, 41.5
Vegetables	9.1	5.0, 16.0	9.5	4.1, 20.6
Fruits	17.1	12.0, 23.7	1.6	0.2, 11.4
Bread, Cereal, Rice, and Pasta	16.0	10.0, 24.8	9.5	4.5, 18.9
Total	100.0		100.0	

Note. Estimates have been adjusted for the clustering of characters within movies. Design F (4.56, 351.10) = 3.09, $p=0.013$.

Representations of Exercise in Popular Films

Turning our attention to exercise, we found a total of 415 exercise events in these 100 movies, which translates into one sports/exercise incident every 29 minutes. The thirteenth research question asked how often are sports and other forms of

planned physical activity depicted in movies. This question is addressed in Table 12, which shows dancing, swimming, boating, jogging, baseball, football, and biking to be the most common activities.

**Table 12: Frequency of Exercise/
Sports Activities
in Popular Movies**

Exercise/ Sports Category	N	% of Total
dancing	63	15.2
swimming	50	14.5
boating	26	6.3
jogging	26	6.3
baseball/softball	22	5.3
football	19	4.6
biking	17	4.1
martial arts	15	3.6
fishing	12	2.9
basketball	11	2.7
mountain climbing	11	2.7
boxing	10	2.4
horseback riding	9	2.2
archery	8	1.9
gladiator "sports"	8	1.9
hiking	8	1.9
playground activities	8	1.9
diving and scuba diving	7	1.7
gymnastics	5	1.2
stepmaster aerobics	5	1.2
wrestling	5	1.2
golf	4	1.0
jumping jacks	4	1.0
race car driving	4	1.0
ping pong/table tennis	3	0.7
soccer	3	0.7
weight lifting	3	0.7
hockey (roller blade)	2	0.5
motor cross	2	0.5
stakeboarding	2	0.5
skiing (snow)	2	0.5
badminton	1	0.2
cheerleading	1	0.2
cricket	1	0.2
hunting	1	0.2
skating (ice)	1	0.2
treadmill aerobics	1	0.2
volleyball	1	0.2
walking	1	0.2
Other	21	5.1
Total	415	100.0

RQ14 asks if there is a significant association between movie rating category and the intensity of physical activity portrayed. Recall that exercise events were classified as "light," "moderate," or "vigorous" based on the work of Ainsworth et al. Our analyses for this research question excluded 16.7% of cases that were not a part of the Ainsworth et al. classification scheme. Using the svytab procedure, we found no significant association between the intensity of these events and movie rating ($p=.36$). There were relatively few events classified as "light intensity" (7.4 percent). We thus compared "light" and "moderate" intensity events (59.9% of classifiable events) with vigorous activities (40.1% of events). Once again, there was no association between movie rating and intensity ($p=.74$).

RQ15 asks if there is a significant association between the intensity of physical activity and the character's sex, age (18 and under versus adults), ethnicity (white versus nonwhite), social class (low, middle, upper), and educational level (lesser versus more educated). Using the simplified intensity measure (light/moderate versus vigorous) our svytab analyses revealed no significant association between intensity and character sex ($p=.50$), age ($p=.60$), ethnicity ($p=.27$), social class ($p=.44$), or education level ($p=.47$).

The sixteenth research question asked, When a human character engages in exercise, is that person's personal reaction (expressed verbally or nonverbally) to that activity positive, negative, or neutral? In 0.3% of cases a negative evaluation was given; no evaluation was made in the remaining cases. Thus, characters do not typically express, verbally or nonverbally, an evaluation of their planned physical activities. With regard to RQ17, we found that a social evaluation was made by other characters of a focal character's exercise in 0.5% of cases, a negative evaluation was made in 0.2% of cases, and no evaluation was offered in the remaining exercise incidents. Thus, exercise was rarely accompanied by a personal or social evaluation. More common was the attribution of one's activity to improved fitness; in 4.5 percent of cases, the character expressed such an attribution.

Discussion

Food and drink appear regularly on the Big Screen. More than 40% of the items shown would appear to be “beverage props” – alcohol or drinks with no caloric content (tea, coffee, water, diet sodas). Those items that were classifiable into the Food Guide Pyramid categories were disproportionately likely to be foods high in fats, oils and sugars; cancer-preventing fruits and vegetables were seldom shown, as were dairy products. Branded food items appeared irregularly; a movie-goer might expect to see 1-2 branded food items in the typical movie, most likely for a soda drink or beer.

We found little evidence that the food items shown in these movies varied as a function of the movie’s rating. For reasons that are not readily apparent, characters tended to ingest their foods more often in R movies, however. Characters’ demographic features were not associated with the foods they consumed, with the one exception of body type. Overweight and obese characters were depicted as less healthy eaters. They were more likely to consume foods high in fat and sugar, and tended to avoid fruits. The overweight and obese were also underrepresented in movies. In an era when a majority of Americans are overweight or obese, the incidence of obesity in film is remarkably low.

While food appears often in the movies, it is typically found in the background or treated as a prop. For example, only one in four food items shown was ingested. Many of the foods shown could not be clearly identified by the coders, and others could be classified in only the most general of ways. One would be hard-pressed to evaluate the nutritional merits of many of the dishes that appear on the screen. Furthermore, the foods that are consumed are typically the focus of characters’ evaluations.

One potential source of concern is the frequency with which alcohol appears in movies. We found that approximately one-fifth of consumable items were beer, liquor or wine and that alcohol was much more likely to be ingested than food. This finding is consistent with earlier investigations that have also documented the high incidence of alcohol in film.

Planned exercise and sports were also common in movies, appearing at a rate of about two incidents an hour. However, these activities rarely received comment or evaluation by any of the characters. A character’s demographic profile was not associated significantly with the intensity of his or her exercise and sporting “choices.” There was no evidence that the intensity or nature of planned fitness and sporting activities were associated with movie rating, either.

Speculating on the Effects of Movie Portrayals of Food, Alcohol, and Exercise

The focus of this study has been on the manner in which food, alcohol, and exercise are portrayed in popular films, not the impact of those portrayals on viewers. Even so, it is useful to speculate on the potential effects of these depictions, given what is known about how media influence the public. Two theories would seem to offer particularly useful frameworks for such speculation: Social Learning Theory and Cultivation Analysis.

Social Learning Theory

Social Learning Theory (SLT) provides a psychosocial framework for understanding the reciprocal relationships among behavior, personal factors, and the environment. The theory has evolved considerably since its introduction more than 60 years ago⁹⁷ (Miller & Dollard, 1941), due in large part to the contributions of Albert Bandura.^{98 99 100 101} Behavior occurs in the context of an *environment* with physical and social facets. The environment can affect a person’s behavior within or beyond that individual’s awareness.

A person's mental representation of the environment is referred to as the *situation*. According to SLT, an important aspect of the situation is the person's perception of the outcomes of a particular behavior (the individual's *expectations*) and the value placed upon these outcomes (*incentives*). Incentives can be positive (e.g., "exercise makes me more popular with others") or negative (e.g., "exercise is painful"). In general, a person will perform behaviors that maximize positive outcomes and minimize negative ones. Short-term benefits appear to be more influential than long-term benefits. Incentives can develop through a person's own experiences or by observing the outcomes obtained by others ("social models") when they perform the behavior.

An important part of people's calculations is their *capacity for behaving*. Regardless of expectancies, a behavior cannot be enacted unless a person has knowledge of the behavior and possesses the skills to perform the behavior. Another significant personal factor is the confidence (*self-efficacy*) a person possesses regarding his or her ability to perform the behavior. A person who believes that caloric restriction would lead to rewards would be unlikely to participate in a weight control program if he does not feel in control of his eating.

Success is also shaped by a person's quality of *self-control*. One's self-control can be enhanced with specific definitions of the target behavior (e.g., "I will consume no more than 1200 calories a day"), consistent self-observation of one's behavior (e.g., regular "weigh-ins"), and a clear performance criterion (e.g., loss of two pounds per week). Also facilitating success is effective management of emotional arousal, which can interfere with learning and performance.

A typical viewer of these films would probably have the capacity to imitate characters' exercise and eating practices, but the absence of incentives would make it unlikely that they would do so. As noted, characters seldom comment, for better or worse, on their food and exercise behaviors and seldom receive positive or negative reinforcements from others for those behaviors. The conditions for modeling would appear to be absent. On the other hand, one could argue that characters who exercise without comment are

conveying the message that this activity is a routine lifestyle behavior undertaken for unstated, positive benefits.

Cultivation Analysis

The focus of cultivation analysis, a framework developed by George Gerbner in the 1970s, is on the relationship between media exposure and people's beliefs about reality.¹⁰² Cultivation analysis proposes that frequent viewers of the media (television viewing has been the typical form of media studied) will come to adopt beliefs about the nature of the real world "that reflect the most stable and recurrent patterns of portrayals in the television world (p. 10)."¹⁰³ Essentially, the theory proposes that the media provide a lens through which we experience the world, one that comes to shape our beliefs about the world in which we live. For example, heavy viewers tend to have perceptions of the real world that converge with media portrayals of that world _ even when those portrayals are inaccurate. For instance, heavy viewers tend to overestimate the amount of danger and violence in the world, presumably because of the heavy violence content in television.

We believe that it is more plausible that heavy movie viewing could in some way affect viewers' beliefs about what constitutes normative behavior with regard to nutrition and exercise. However, the low profile given to most foods, together with the fact that they are seldom consumed, makes it unlikely that unhealthy beliefs are cultivated. We believe that the typical viewer would find the task of reporting accurately the foods they saw, even if quizzed immediately after viewing, in most of the films we analyzed. With regard to the physical activities examined, we believe that such a wide cross-section was present in these films that beliefs about society's exercise and sporting proclivities would not likely be altered.

Limitations

This study is not without limitations. First, the movies examined were based on the a criterion other than random sampling. While it makes good sense to focus on those movies that have been most popular, the findings may not generalize to the population of motion pictures produced in the time frame examined. Second, our decision to code food incidents based on the food guide pyramid brings with it inherent limitations. In particular, the food guide provides a better framework for classifying the ingredients that go into our foods than the meals we eat. As a result, it was necessary to classify many items based on their predominant ingredient. For example, French fries were classified under "fats," not vegetables, because most of the calories in fries comes from the oils used in the frying process. Third, resource constraints forced us to examine "sport" fitness activities rather than energy expenditures.

Conclusion

There seems to be no shortage of exercise and sporting episodes in the movies, although the depiction of food could certainly be healthier and alcohol could certainly be used less as a prop. Even so, the obscure nature of these portrayals, along with the lack of social reinforcement for consumption choices, makes it difficult to argue that these depictions pose a threat to viewers' health. When one contrasts the obscure manner in which food is depicted in movies with the explicit, focused, and promotional nature of food depictions in advertising, it becomes clear that critics would be well-advised to direct their energies toward mitigating the effects of food advertising. Those who wish to reform the film industry would probably do more to improve the health of Americans by attacking the concessions stands at the theatres and the soda, popcorn, and candy advertisements that precede every movie. In any regard, it would seem patently unfair to blame the entertainment industry for showing Americans eating unhealthy foods. We do live in a culture of gluttony,¹⁰⁴ and it is the screenwriters' and movie directors' prerogative to depict that excessively indulgent reality.

References

- ¹ United States Department of Health and Human Services. *Healthy People 2010*. Conference Edition. Washington, DC, 2000.
- ² Perse, E. *Media Effects and Society*. Mahwah, NJ: Lawrence Erlbaum, 2001.
- ³ The Harvard Report on Cancer Prevention. Volume 1: Causes of Human Cancer. *Cancer Causes and Control*. 1996; 7: S7-S9.
- ⁴ The American Cancer Society 1996 Advisory Committee on Diet, Nutrition and Cancer Prevention. Guidelines on diet, nutrition, and cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA Cancer J Clin*. 1996; 46-59.
- ⁵ Zigler RG. Vegetables, fruits, and carotenoids and the risk of cancer. *American Journal of Clinical Nutrition*. 1991; 53:2515-2595.
- ⁶ Ripple MO, Henry WF, Rago RP, Wilding G. Pro-oxidant shift induced by androgen treatment of human prostate carcinoma cells. *J Natl Cancer Inst*. 1997;89: 40-48.
- ⁷ Ames BN, Gold LS, and Wilett WC. *The causes and prevention of cancer*. Proceedings of the National Academy of Sciences. 1995; 92: 5258-5265.
- ⁸ Miller BA, Kolonel LN, Berstein L, Youn JL, Swanson GM, et al. (eds.). *Racial/Ethnic patterns of cancer in the United States, 1988-1992*. National Cancer Institute, NIH Pub. No.96-4104. Bethesda, MD, 1996.
- ⁹ *Cancer Facts & Figures for African Americans, 1998-1999*. American Cancer Society; 1998. Publication No. 98020M-NO.8614.98-R.
- ¹⁰ Marchand LL, Kolonel LN, Wilkens AR, Myers BC, Hirohata T. Animal Fat Consumption and Prostate Cancer: A Prospective Study in Hawaii. *Epidemiology*. 1994; 5: 276-282.
- ¹¹ Giovannucci E, Rimm E, Colditz GA, Stemfer MJ, Ascherio A, Chute C, Willet W. A Prospective Study of Dietary Fat and Risk of Prostate Cancer. *Journal of the National Cancer Institute*; 1993; 85: 1571-1579.
- ¹² Hebert JR; Hurley TG; Olendzki BC; Teas J; Ma J; Hampl JS. Nutritional and socioeconomic factors in relation to prostate cancer mortality: a cross-national study. *J Natl Cancer Inst*. 1998; 90: 1637-47.
- ¹³ Kumanyika S. Diet and Chronic Disease Issues for Minority Populations, *Journal of Nutrition Education*. 1990; 22: 89-96.
- ¹⁴ Albanes D, Blair A, Taylor PR. Physical activity and risk of cancer in the NHANES I population. *American Journal of Public Health*. 1989;79:744-750.
- ¹⁵ American Institute for Cancer Research. *Food, Nutrition and the Prevention of Cancer: A Global Perspective*. Washington, DC, 1997.
- ¹⁶ Gammon MD, SchoenbergJB, Britton JA, Kelsey JL, Coates RJ, et al. Recreational physical activity and breast cancer risk among women under age 45 years. *American Journal of Epidemiology*. 1998; 147:273-280.
- ¹⁷ Musaiger AO. Knowledge and attitudes of university female students toward obesity. *International Quarterly of Community Health Education*.1994; 14:337-343.

- ¹⁸ Hofstetter CR, Schultze WA, Mulvihill MM. Communications media, public health, and public affairs: Exposure in a multimedia community. *Health Communication*. 1992; 4:259-71.
- ¹⁹ Barcus FE, Wolkin R. (1977). *Children's Television: An Analysis of Programming and Advertising*. New York: NY: Praeger.
- ²⁰ Cotugna N. (1988). TV ads on Saturday morning children's programming: What's new? *Journal of Nutrition Education*. 1977; 20: 125-127.
- ²¹ Olgetree SM, Williams SW, Raffeld P, Mason B, & Frick K. Female attractiveness and eating disorders: Do children's television commercials play a role? *Sex Roles*. 1990; 22: 791-797.
- ²² Taras HL, Gage M. Advertised foods on children's television. *Archives of Pediatric Adolescent Medicine*. 1995; 149: 649-652.
- ²³ Rajecki DW, Dame JA, Creek KJ, Barrickman PJ, Reid CA, Appleby DC. Gender casting in television toy advertisements: Distributions, message content analysis, and evaluations. *Journal of Consumer Psychology*. 1993; 2: 307-327.
- ²⁴ Kotz K, Story M.. Food advertisements during children's Saturday morning television programming: Are they consistent with dietary recommendations? *Journal of the American Dietetic Association*. 1994;94: 1296-1300.
- ²⁵ Lewis MK, Hill AJ. Food advertising on British children's television: a content analysis and experimental study with nine-year olds. *International Journal of Obesity*. 1998; 22: 206-214.
- ²⁶ Sheppard MA, Lockhart D. Alcohol advertising on television: Should we be worried? *The International Journal of the Addictions*. 1988; 23: 429-432.
- ²⁷ Lank NH, Vickery CE, Cotugna N, Shade DD. Food commercials during television soap operas: What is the nutrition message? *Journal of Community Health*. 1992;17: 377-384.
- ²⁸ Masover L, Stamler J. Address to the Convention of the American Public Health Association 1976. Cited in D.B. Jeffrey, R.W., McLellarn, & D.T. Fox. The development of children's eating habits: The role of television commercials. *Health Education Quarterly*. 1982; 9: 174-189.
- ²⁹ Kuribayashi A, Roberts MC, Johnson RJ. Actual nutritional information of products advertised to children and adults on Saturday. *Children's Health Care*, 30, 309-322.
- ³⁰ Wallack, L, Dorfman L. Health messages on television commercials. *American Journal of Health Promotion*. 1992; 6: 190-196.
- ³¹ Peterson PE, Jeffrey DB, Bridgwater CA, Dawson B. How pronutrition television programming affects children's dietary habits. *Developmental Psychology*. 1984; 20: 55-63.
- ³² Carruth, B.R., Goldberg, D.L., & Skinner, J.D. Do parents and peers mediate the influence of television advertising on food-related purchases? *Journal of Adolescent Research*. 1991; 6: 253-271.
- ³³ Neumark-Sztainer A, Story M, Perry C, Casey MA. Factors influencing food choices of adolescents: Findings from focus-group discussions with adolescents. *Journal of the American Dietitian Association*. 1999; 99: 929-976.
- ³⁴ Rajecki DW, McTavish DG, Rasmussen JL, Schreuders M, Byers DC, Jessup KS. Violence, conflict, trickery, and other story themes in TV ads for food for children. *Journal of Applied Social Psychology*. 1994; 24: 1685-1700.
- ³⁵ Scammon DL, Christopher CL. Nutrition education with children via television: a review. *Journal of Advertising*. 1981; 6:131-133.
- ³⁶ Clancy-Hepburn K, Hickey A, Nevill G. Children's behavior responses to TV food advertisements. *Journal of Nutrition Education*. 1974; 6: 93-96.

- ³⁷ Goldberg M, Gorn G, Gibson W. TV messages for snack and breakfast foods: Do they influence children's preferences? *Journal of Consumer Research*. 1978; 5: 125-130.
- ³⁸ Taras HL, Sallis JF, Patterson TL, Nader PR, Nelson JA. Television's influence on children's diet and physical activity. *Journal of Developmental and Behavioral Pediatrics*. 1989; 10:176-180.
- ³⁹ Galst J. Television food commercials and pronutritional public service announcements as determinants of young children's snack choices. *Child Development*. 1980; 51: 935-938.
- ⁴⁰ Galst J, White M. The unhealthy persuader: The reinforcing value of television and children's purchase-influencing attempts at the supermarket. *Child Development*. 1976; 47: 1089-1096.
- ⁴¹ Gorn GJ, Goldberg ME. Behavioral evidence of the effects of televised food messages on children. *Journal of Consumer Research*. 1982; 9:200-205.
- ⁴² del Toro W, Greenberg BS. Television commercials and food orientations among teenagers in Puerto Rico. *Hispanic Journal of Behavioral Sciences*. 1989; 11: 168-177.
- ⁴³ Ewing M, Napoli J, Plessis ED. Factors affecting in-market recall of food product advertising. *Journal of Advertising Research*. 1999; 39: 29-38.
- ⁴⁴ Ippolito PM, Mathios AD. Information, advertising and health choices: A study of the cereal market. *Journal of Economics*. 1990; 21: 459-480.
- ⁴⁵ Kilbourne, J. (1999). *Deadly Persuasion: Why Women and Girls Must Fight the Addictive Power of Advertising*. New York: Free Press, 1999.
- ⁴⁶ Levine MP, Smolak L. Media as a context for the development of disordered eating. In L. Smolak & M.P. Levine (Eds.), *The Developmental Psychopathology of Eating Disorders: Implications for Research, Prevention, and Treatment*. Mahwah, NJ: Lawrence Erlbaum, 1996.
- ⁴⁷ Way WI. Food-related behaviors on prime-time television. *Journal of Nutrition Education*. 1983; 15: 105-109.
- ⁴⁸ Singleton N, Rhoads DS. An assessment of the nutrition education of students in grades 3 to 12. *Journal of the American Dietetic Association*. 1984; 84, 59-64.
- ⁴⁹ Skinner JD, Woodburn MJ. Nutrition knowledge of teenagers. *Journal of School Health*. 1984; 54, 71-74.
- ⁵⁰ Thomsen PA, Terry RD, Amos RJ. Nutrition information sources used by adolescents. *Home Economics Research Journal*. 1988; 16, 215-221.
- ⁵¹ Kaufman L. Prime-time nutrition. *Journal of Communication*. 1980; 30: 37-46.
- ⁵² Signorielli N. Health images on television. In LD Jackson, BK Duffy (Eds.), *Health Communication Research: A Guide to Developments and Directions*. Greenwood Press, Westport, CT, 1998, pp. 163-179.
- ⁵³ Larson MS. Health-related messages embedded in prime-time television entertainment. *Health Communication*. 1991; 3:175-184.
- ⁵⁴ Story M, Faulkner P. The prime time diet: A content analysis of eating behavior and food messages in television program content and commercials. *American Journal of Public Health*. 1990; 80: 738-740.
- ⁵⁵ McEwen WJ, Hanneman GJ. The depiction of drug use in television programming. *Journal of Drug Education*. 1974; 4 :281-293.
- ⁵⁶ Greenberg BS, Fernandez-Collado C, Graef D, Korzenny F, Atkin CK. Trends in use of alcohol and other substances on television. *Journal of Drug Education*, 9: 243-253.
- ⁵⁷ Fernandez-Collado C, Greenberg BS, Korzenny F, Atkin CK. Sexual intimacy and drug use in TV series. *Journal of Communication*. 1978; 28: 30-37.

- ⁵⁸ Breed W, DeFoe JR. Drinking on television. *Bottom Line on Alcohol in Society*. 1978; 2: 28-29.
- ⁵⁹ Garlington WK. Drinking on television: A preliminary study with emphasis on method. *Journal of Studies on Alcohol*. 1977; 38:2199-2205.
- ⁶⁰ Lowery SA. Soap and booze in the afternoon: An analysis of the portrayal of alcohol use in day-time serials. *Journal of Studies on Alcohol*. 1980; 41: 829-838.
- ⁶¹ Futch EJ, Lisman SA, Geller MI. (1984). An analysis of alcohol portrayal on prime-time television. *International Journal of the Addictions*. 1984; 19: 403-410.
- ⁶² Mathios A, Avery R, Bisogni C, Shanahan J. Alcohol portrayal on prime-time television: Manifest and latent messages. *Journal of Studies on Alcohol*. 1998; 59: 305-310.
- ⁶³ Signorielli N, Lears M. Television and children's conceptions of nutrition: Unhealthy messages. *Health Communication*. 1992; 4: 245-257.
- ⁶⁴ Donkin AJM, Neale RJ, Tilston C. Children's food purchase requests. *Appetite*. 1993; 21, 291-294.
- ⁶⁵ Burdine JN, Chen MSS, Gottlieb NH, Peterson FL, Vacalis D. (1984). The effects of ethnicity, sex, and father's occupation on heart health knowledge and nutrition behavior of school children: The Texas Youth Awareness Survey. *Journal of School Health*. 1984; 54: 87-90.
- ⁶⁶ Gerbner G, Morgan M, Signorelli N. Programming health portrayals: What viewers see, say, and do. In D. Pearl, I. Bouthilet, & J. Logan (Eds.), *Nutrition and Behavior: Ten Years of Scientific Progress and Implications for the Eighties* (Vol. 2, pp. 291-307). DHHS Publication No. ADM 82 1196. Washington, DC: U.S. GPO. 1982.
- ⁶⁷ del Toro W, Greenberg BS. Television commercials and food orientations among teenagers in Puerto Rico. *Hispanic Journal of Behavioral Sciences*. 1989; 11: 168-177.
- ⁶⁸ Wadden TA, Brownell KD, Foster GD. Obesity: Responding to the global epidemic. *Journal of Consulting and Clinical Psychology*, 70, 510-525.
- ⁶⁹ Dietz WH, Gortmaker SI. Do we fatten our children at the television set? Obesity and television viewing in children and adolescents. *Pediatrics*. 1985; 75: 807-812.
- ⁷⁰ Dietz WH. You are what you eat: What you eat is what you are. *Journal of Adolescent Health Care*. 1990; 11: 76-81.
- ⁷¹ Silverstein B, Perdue L, Petersen B, Kelly E. (1986). The role of the mass media in promoting a thin standard of bodily attractiveness for women. *Sex Roles*. 1986; 14: 519-532.
- ⁷² Tucker, L.A. The relationship of television viewing to physical fitness and obesity. *Adolescence*. 1986; 21: 797-806.
- ⁷³ Van den Bulck J. Is television bad for your health? Behavior and body image of the adolescent "couch potato." *Journal of Youth and Adolescence*. 2000; 29: 273-288.
- ⁷⁴ Andersen RE, Crespo CJ, Bartlett SJ, Cheskin LJ. Relationship of physical activity and television watching with body weight and level of fatness among children: Results from the third national health and nutrition examination survey. *JAMA*. 1998; 279:938-942.
- ⁷⁵ Crespo CJ, Smit E, Troiano RP, Bartlett SJ, Macera CA, Andersen RE. Television watching, energy intake, and obesity in US children: Results from the third National Health and Nutrition Examination Survey, 1988-1994. *Archives of Pediatrics and Adolescent Medicine*. 2001; 155:360-5.
- ⁷⁶ Vioque J, Torres A, Quiles J. Time spent watching television, sleep duration and obesity in adults living in Valencia, Spain. *International Journal of Obesity and Related Metabolic Disorders*. 2000; 24:1683-8.

- 77 Jeffery RW, French SA. Epidemic obesity in the United States: are fast foods and television viewing contributing? *American Journal of Public Health*. 1998; 88:277-80.
- 78 Horn O, Potvin L, Macaulay AC, Desrosiers S. Correlates and predictors of adiposity among Mohawk children. *Preventive Medicine: An International Journal Devoted to Practice and Theory*. 2001; 33: 274-281.
- 79 Gable S, Lutz S. Household, parent, and child contributions to childhood obesity. *Family Relations*. 2000; 49: 293-300.
- 80 Ching PLYH, Willett WC, Rimm EB, Colditz GA, et al. Activity level and risk of overweight in male health professionals. *American Journal of Public Health*. 1996; 86:25-30.
- 81 Tucker, L.A., & Bagwell, M. Television viewing and obesity in adult females. *American Journal of Public Health*. 1991; 81: 908-911.
- 82 Robinson TN. Reducing children's television viewing to prevent obesity: A randomized controlled trial. *Journal of the American Medical Association*. 1999; 282: 1561-1567.
- 83 Terre L, Drabman RS, Speer P. Health-relevant behaviors in media. *Journal of Applied Social Psychology*. 1991; 21:1303-1319.
- 84 Film product placement citation from the *Wall Street Journal*.
- 85 Sheppard-Sawyer CL, McNally RJ, Fischer JH. Film-induced sadness as a trigger for disinhibited eating. *International Journal of Eating Disorders*. 2000; 28:215-220.
- 86 Hazan AR, Lipton HL, Glantz SA. Popular films do not reflect current tobacco use. *American Journal of Public Health*, 1994; 84: 998-1000.
- 87 Escamilla G, Craddock AL, Kawachi I. Women and smoking in Hollywood movies: a content analysis. *American Journal of Public Health*. 2000; 90:412-4.
- 88 Pelletier AR, Quinlan KP, Sacks JJ, Van Gilder TJ, Gilchrist J, Ahluwalia HK. Injury prevention practices as depicted in G-rated and PG-rated movies. *Archives of Pediatrics and Adolescent Medicine*. 2000; 154 :283-6.
- 89 Denzin, Norman K. *Hollywood Shot by Shot: Alcoholism in American Cinema*. New York: Aldine de Gruyter, Hawthorne, 1991.
- 90 Gibson B, Maurer J. Cigarette smoking in the movies: The influence of product placement on attitudes toward smoking and smokers. *Journal of Applied Social Psychology*. 2000; 30:1457-1473.
- 91 Hines D, Saris R, Throckmorton-Belzer L. Cigarette smoking in popular films: Does it increase viewers' likelihood to smoke? *Journal of Applied Social Psychology*. 2000; 30:2246-2269.
- 92 Pechmann C, Shih CF. Smoking scenes in movies and antismoking advertisements before movies: Effects on youth. *Journal of Marketing*. 1999; 63:1-13.
- 93 Riffe D, Lacy S, Fico FG. *Analyzing media messages : using quantitative content analysis in research*. Mahwah, N.J.: Erlbaum, 1998.
- 94 Ainsworth BE, et al. Compendium of physical activities: an update of activity codes and MET intensities. *Medicine and Science in Sports and Exercise*. 2000; 32: S498-S516.
- 95 StataCorp 1999. *Stata Statistical Software: Release 6.0*. college Station, TX: Stata Corporation.
- 96 Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977; 33:159-174.
- 97 Miller NE, Dollard J. *Social Learning and Imitation*. New Haven, CT: Yale University Press, 1941.

- ⁹⁸ Bandura A. Social learning through imitation. In M.R. Jones (ed.), *Nebraska Symposium on Motivation, Vol. 10*. Lincoln: University of Nebraska Press, 1962.
- ⁹⁹ Bandura A. *Principles of Behavioral Modification*. New York: Holt, Rinehart & Winston, 1969.
- ¹⁰⁰ Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*. 1977; 84:191-215.
- ¹⁰¹ Bandura A. *Social Foundations of Thought and Action*. Englewood Cliffs, NJ: Prentice-Hall, 1986.
- ¹⁰² Gerbner G, Gross L, Morgan M, Signorielli N, Shanahan J. Growing up with television: Cultivation processes. In J. Bryant & D. Zillman (Eds.), *Media Effects: Advances in Theory and Research* (2nd ed.) (pp. 43-67). Mahwah, NJ: Lawrence Erlbaum Associates, 2002.
- ¹⁰³ Signorielli N, Morgan M, Introduction. In N. Signorielli and M. Morgan (Eds.), *Cultivation Analysis* (pp. 1-15). Newbury Park, CA: Sage, 1990.
- ¹⁰⁴ Alcalay R, Bell RA. *Promoting Nutrition and Physical Activity through Social Marketing: Current Practices and Recommendations*. Center for Advanced Studies in Nutrition and Social Marketing, U.C. Davis, CA, 2000.

Appendix A

Top-Grossing Motion Picture Films, U.S. Box Office, 1991-2000

Year	Movie	Rating	Gross
2000	<i>How the Grinch Stole Christmas</i>	PG	\$ 260,031,035
2000	<i>Cast Away</i>	PG13	\$ 233,503,178
2000	<i>Mission: Impossible II</i>	PG13	\$ 215,397,307
2000	<i>Gladiator</i>	R	\$ 187,670,866
2000	<i>What Women Want</i>	PG13	\$ 182,805,123
2000	<i>The Perfect Storm</i>	PG13	\$ 182,618,434
2000	<i>Meet the Parents</i>	PG13	\$ 166,225,040
2000	<i>X-Men</i>	PG13	\$ 157,299,717
2000	<i>Scary Movie</i>	R	\$ 156,997,084
2000	<i>What Lies Beneath</i>	PG13	\$ 155,370,362
1999	<i>Star Wars: Episode I - The Phantom Menace</i>	PG	\$ 431,065,444
1999	<i>The Sixth Sense</i>	PG13	\$ 293,501,675
1999	<i>Toy Story 2</i>	G	\$ 245,823,397
1999	<i>Austin Powers: The Spy Who Shagged Me</i>	PG13	\$ 205,399,422
1999	<i>The Matrix</i>	R	\$ 171,383,253
1999	<i>Tarzan</i>	G	\$ 171,085,177
1999	<i>The Mummy</i>	PG13	\$ 155,247,825
1999	<i>Runaway Bride</i>	PG	\$ 152,149,590
1999	<i>The Blair Witch Project</i>	R	\$ 140,530,114
1999	<i>Stuart Little</i>	PG	\$ 140,015,224
1998	<i>Saving Private Ryan</i>	R	\$ 216,119,491
1998	<i>Armageddon</i>	PG13	\$ 201,573,391
1998	<i>There's Something About Mary</i>	R	\$ 176,483,808
1998	<i>A Bug's Life</i>	G	\$ 162,792,677
1998	<i>The Waterboy</i>	PG13	\$ 161,487,252
1998	<i>Doctor Dolittle</i>	PG13	\$ 144,156,464
1998	<i>Rush Hour</i>	PG13	\$ 141,153,686
1998	<i>Deep Impact</i>	PG13	\$ 140,459,099
1998	<i>Godzilla</i>	PG13	\$ 136,023,813
1998	<i>Patch Adams</i>	PG13	\$ 135,014,968
1997	<i>Titanic</i>	PG13	\$ 600,779,824

Portrayals of Nutritional Practices and Exercise Behavior In Popular American Films, 1991-2000

1997	<i>Men in Black</i>	PG13	\$ 250,147,615
1997	<i>The Lost World: Jurassic Park</i>	PG13	\$ 229,074,524
1997	<i>Liar Liar</i>	PG13	\$ 181,395,380
1997	<i>Air Force One</i>	R	\$ 172,888,056
1997	<i>As Good As It Gets</i>	PG13	\$ 147,637,474
1997	<i>Good Will Hunting</i>	R	\$ 138,339,411
1997	<i>My Best Friend's Wedding</i>	PG13	\$ 126,805,112
1997	<i>Tomorrow Never Dies</i>	PG13	\$ 125,332,007
1997	<i>Face/Off</i>	R	\$ 112,225,777
1996	<i>Independence Day</i>	PG13	\$ 306,124,059
1996	<i>Twister</i>	PG13	\$ 241,700,000
1996	<i>Mission: Impossible</i>	PG13	\$ 180,965,237
1996	<i>Jerry Maguire</i>	R	\$ 153,620,822
1996	<i>Ransom</i>	R	\$ 136,448,821
1996	<i>101 Dalmatians</i>	PG	\$ 136,182,161
1996	<i>The Rock</i>	R	\$ 134,006,721
1996	<i>The Nutty Professor</i>	PG13	\$ 128,800,000
1996	<i>The Birdcage</i>	R	\$ 124,000,000
1996	<i>A Time to Kill</i>	R	\$ 108,700,000
1995	<i>Toy Story</i>	G	\$ 191,800,000
1995	<i>Batman Forever</i>	PG13	\$ 184,031,112
1995	<i>Apollo 13</i>	PG	\$ 172,071,312
1995	<i>Pocahontas</i>	G	\$ 141,600,000
1995	<i>Ace Ventura: When Nature Calls</i>	PG13	\$ 108,344,348
1995	<i>GoldenEye</i>	PG13	\$ 106,400,000
1995	<i>Casper</i>	PG	\$ 100,328,194
1995	<i>Jumanji</i>	PG	\$ 100,200,000
1995	<i>Se7en</i>	R	\$ 100,125,000
1995	<i>Die Hard: With a Vengeance</i>	R	\$ 100,012,500
1994	<i>Forrest Gump</i>	PG13	\$ 329,691,196
1994	<i>The Lion King</i>	G	\$ 312,900,000
1994	<i>True Lies</i>	R	\$ 146,261,000
1994	<i>The Santa Clause</i>	PG	\$ 144,833,357
1994	<i>The Flintstones</i>	PG	\$ 130,512,915
1994	<i>Dumb & Dumber</i>	PG13	\$ 127,175,354
1994	<i>Clear and Present Danger</i>	PG13	\$ 122,012,710
1994	<i>Speed</i>	R	\$ 121,226,560

1994	<i>The Mask</i>	PG13	\$ 119,938,730
1994	<i>Pulp Fiction</i>	R	\$ 107,930,000
1993	<i>Jurassic Park</i>	PG13	\$ 356,784,000
1993	<i>Mrs. Doubtfire</i>	PG13	\$ 219,200,000
1993	<i>The Fugitive</i>	PG13	\$ 183,875,760
1993	<i>The Firm</i>	R	\$ 158,348,400
1993	<i>Sleepless in Seattle</i>	PG	\$ 126,533,006
1993	<i>Indecent Proposal</i>	R	\$ 106,614,100
1993	<i>In the Line of Fire</i>	R	\$ 102,314,283
1993	<i>The Pelican Brief</i>	PG13	\$ 100,768,056
1993	<i>Schindler's List</i>	R	\$ 96,067,179
1993	<i>Cliffhanger</i>	R	\$ 84,049,211
1992	<i>Aladdin</i>	G	\$ 217,350,219
1992	<i>Home Alone 2: Lost in New York</i>	PG	\$ 173,585,516
1992	<i>Batman Returns</i>	PG13	\$ 162,831,698
1992	<i>Lethal Weapon 3</i>	R	\$ 144,731,527
1992	<i>A Few Good Men</i>	R	\$ 141,340,178
1992	<i>Sister Act</i>	PG	\$ 139,610,000

Portrayals of Nutritional Practices and Exercise Behavior In Popular American Films, 1991-2000

1992	<i>The Bodyguard</i>	R	\$ 121,945,720
1992	<i>Wayne's World</i>	PG	\$ 121,697,350
1992	<i>Basic Instinct</i>	R	\$ 117,727,000
1992	<i>A League of Their Own</i>	PG	\$ 107,458,785
1991	<i>Terminator 2: Judgment Day</i>	R	\$ 204,843,350
1991	<i>Robin Hood: Prince of Thieves</i>	PG13	\$ 165,500,000
1991	<i>Beauty and the Beast</i>	G	\$ 145,863,363
1991	<i>The Silence of the Lambs</i>	R	\$ 130,727,000
1991	<i>City Slickers</i>	PG13	\$ 124,033,791
1991	<i>Hook</i>	PG	\$ 119,654,900
1991	<i>The Addams Family</i>	PG13	\$ 113,502,000
1991	<i>Sleeping with the Enemy</i>	R	\$ 101,580,000
1991	<i>Father of the Bride</i>	PG	\$ 89,325,780
1991	<i>The Naked Gun 2 1/2: The Smell of Fear</i>	PG13	\$ 86,930,411

Appendix B

Coding Form For Analyzing Nutrition-Related Portrayals

Nutrition and Exercise in Popular Films
Food Item Report

MOVIE ID#: _____

ABBREVIATED MOVIE TITLE: _____

TEMPORAL LOCATION ON TAPE: hour: ____ / minute: ____ / second: ____

DURATION: ____ minutes, ____ seconds

DESCRIBE ITEM:

WAS ITEM BRANDED? ____no ____yes (brand name: _____)

PHYSICAL SETTING: ____domestic ____business ____restaurant ____outdoors
____transport ____extraterrestrial ____not determinable
____other *please describe:* _____

WAS THIS ITEM "FOOD" OR "ALCOHOL"?

____food

____alcohol. What type?

____beer ____wine ____liquor ____?

Was this food item ingested? ____yes

Was this alcohol item ingested? ____yes ____no

____no

If ingested, was it ingested as part of a meal or as a snack?

If ingested, was this item eaten in the presence or absence of food?

____meal

____food was present

____snack

____food was absent

____undeterminable

Describe all characters who ingested this food or alcohol item on the form on the back of this sheet. →

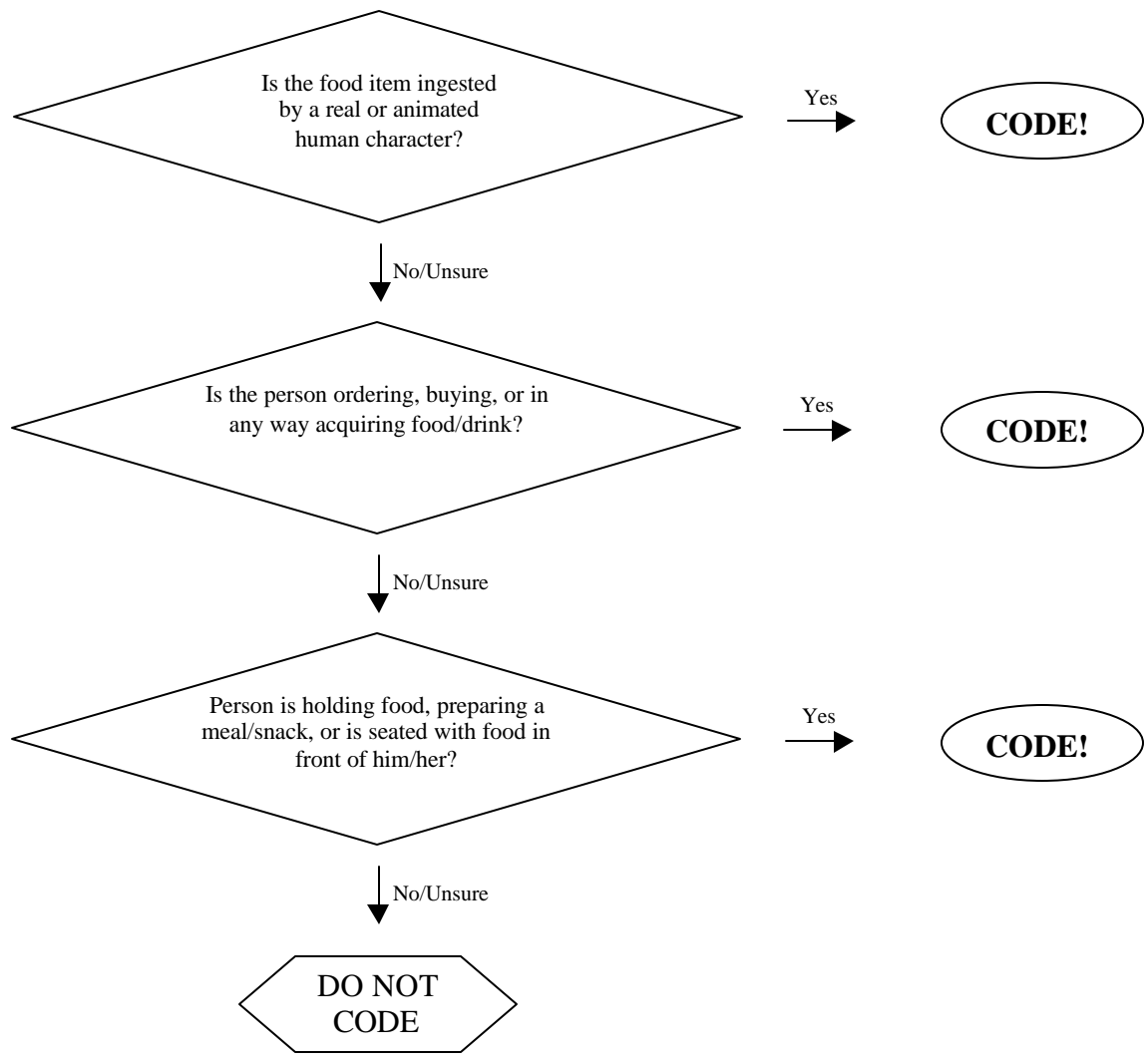
**Describe The Characteristics Of Every Character Who Ingested This Food Item.
(Staple Additional Forms If Necessary)**

<p>Character Name/Description: _____</p> <p>Sex: female male</p> <p>Estimated Age: ____</p> <p>SES1: low middle upper undeterminable</p> <p>SES2: educated lesser-educated undeterminable</p> <p>Race: ___African-Amer ___Asian/Pacific Islander ___Caucasian ___Hispanic ___Native Amer/Alaskan ___Other/Unknown ___Mixed</p> <p>Body Type: underweight average overweight obese</p> <p>Personal Evaluation: positive neutral negative</p> <p>Social Evaluation: positive neutral negative alone</p> <p>Intoxication (If alcohol): sober tipsy drunk</p>	<p>Character Name/Description: _____</p> <p>Sex: female male</p> <p>Estimated Age: ____</p> <p>SES1: low middle upper undeterminable</p> <p>SES2: educated lesser-educated undeterminable</p> <p>Race: ___African-Amer ___Asian/Pacific Islander ___Caucasian ___Hispanic ___Native Amer/Alaskan ___Other/Unknown ___Mixed</p> <p>Body Type: underweight average overweight obese</p> <p>Personal Evaluation: positive neutral negative</p> <p>Social Evaluation: positive neutral negative alone</p> <p>Intoxication (If alcohol): sober tipsy drunk</p>
<p>Character Name/Description: _____</p> <p>Sex: female male</p> <p>Estimated Age: ____</p> <p>SES1: low middle upper undeterminable</p> <p>SES2: educated lesser-educated undeterminable</p> <p>Race: ___African-Amer ___Asian/Pacific Islander ___Caucasian ___Hispanic ___Native Amer/Alaskan ___Other/Unknown ___Mixed</p> <p>Body Type: underweight average overweight obese</p> <p>Personal Evaluation: positive neutral negative</p> <p>Social Evaluation: positive neutral negative alone</p> <p>Intoxication (If alcohol): sober tipsy drunk</p>	<p>Character Name/Description: _____</p> <p>Sex: female male</p> <p>Estimated Age: ____</p> <p>SES1: low middle upper undeterminable</p> <p>SES2: educated lesser-educated undeterminable</p> <p>Race: ___African-Amer ___Asian/Pacific Islander ___Caucasian ___Hispanic ___Native Amer/Alaskan ___Other/Unknown ___Mixed</p> <p>Body Type: underweight average overweight obese</p> <p>Personal Evaluation: positive neutral negative</p> <p>Social Evaluation: positive neutral negative alone</p> <p>Intoxication (If alcohol): sober tipsy drunk</p>

Appendix C

Decision Flow Chart For determining the coding eligibility of a food depiction

Decision Flow Chart For determining the coding eligibility of a food depiction



Appendix D

Coding Form For Assessing Instances of Planned Exercise and Sport

Nutrition and Exercise in Popular Films
Exercise Report

Movie ID#: _____ Abbreviated Movie Title: _____

Temporal Location on Tape: hour: ____ / minute: ____ / second: ____

Duration: ____ minutes, ____ seconds

Describe Exercise: _____

Exercise Code: ____ (Reminder: Complete a separate form for scenes in which >1 listed exercise activities are portrayed. Each exercise episode should be reported on its own form.)

Did the character attribute his/her activity as being for the purpose of enhanced fitness? ____no ____yes

Describe The Characteristics Of Every Focal Character Who Engaged in this Activity.
(Staple Additional Forms If Necessary.)

<p>Character Name/Description: _____</p> <p>Sex: female male</p> <p>Estimated Age: ____</p> <p>SES1: low middle upper undeterminable</p> <p>SES2: educated lesser-educated undeterminable</p> <p>Race: ____African-Amer ____Asian/Pacific Islander ____Caucasian ____Hispanic ____Native Amer/Alaskan ____Other/Unknown ____Mixed</p> <p>Body Type: underweight average overweight obese</p> <p>Personal Evaluation: positive neutral negative</p> <p>Social Evaluation: positive neutral negative alone</p>	<p>Character Name/Description: _____</p> <p>Sex: female male</p> <p>Estimated Age: ____</p> <p>SES1: low middle upper undeterminable</p> <p>SES2: educated lesser-educated undeterminable</p> <p>Race: ____African-Amer ____Asian/Pacific Islander ____Caucasian ____Hispanic ____Native Amer/Alaskan ____Other/Unknown ____Mixed</p> <p>Body Type: underweight average overweight obese</p> <p>Personal Evaluation: positive neutral negative</p> <p>Social Evaluation: positive neutral negative alone</p>
---	---

Code	Activity	Code	Activity
01	archery	31	paintball
02	arm wrestling	32	ping pong / table tennis
03	badminton	33	playground activities/play
04	baseball/softball	34	polo (horse)
05	basketball	35	polo, water
06	biking, moving	36	pushups
07	biking, stationary	37	race car driving
08	boating	38	racquetball
09	bowling	39	scootering
10	boxing	40	sit ups
11	cheerleading	41	skateboarding
12	cricket	42	skating, ice (including figure skating)
13	dancing	43	skating, roller
14	fishing	44	skating, rollerblading
15	football	45	skiing, snow
16	gladiator "sports"	46	skiing, water
17	golf	47	snowboarding
18	gymnastics (all)	48	soccer
19	handball	49	stepmaster aerobics training
20	hiking	50	swimming
21	hockey, field	51	swimming – diving/scuba diving
22	hockey, ice	52	tennis
23	hockey, roller	53	treadmill aerobics training
24	hunting	54	volleyball
25	jogging	55	walking, power
26	jumping jacks	56	weight lifting/weight resistance machine training
27	lacrosse	57	wrestling
28	martial arts		
29	motor cross	58	Other (describe on exercise report form)
30	mountain climbing		

Light Intensity Level Activities: boating.

Moderate Intensity Level Activities: archery, badminton, basketball, bowling, cricket, dancing, fishing, football, gymnastics, hiking, hunting, motor cross, ping pong, playground activities, water skiing, swimming, scuba diving, volleyball, weight training.

Vigorous Intensity Level Activities: biking, boxing, handball, hockey (field and ice), jogging, jumping jacks, lacrosse, martial arts, mountain climbing, polo (horse and water), pushups, racquetball, sit ups, skateboarding, skating (ice and roller), rollerblading, snow skiing, soccer, stepmaster aerobics training, swimming, tennis, power walking.

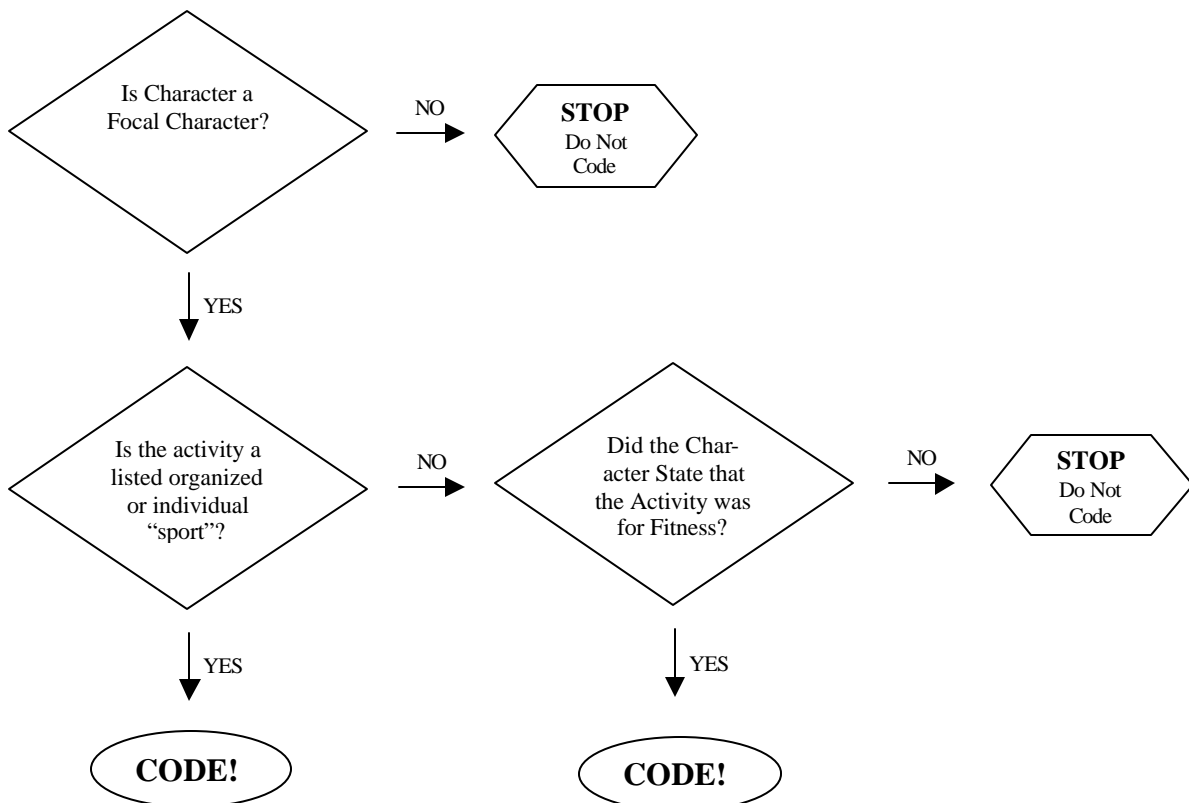
Appendix E

Decision Flow Chart For Assessing The Eligibility Of A Fitness Instance For Further Analysis

Decision Flow Chart For Assessing The Eligibility Of A Fitness Instance For Further Analysis

Definitions

- Focal Character** Any character who is central to the story of the movie or who is the visual focus of a scene.
- Sport** Any activity that is listed as “sport” on the list that follows. [See Appendix D]
- Fitness** A fitness motive should be attributed to a character engaged in a nonsport physical activity if that activity is expressly to be for the purpose of enhanced physical fitness, stress reduction, the treatment of a medical condition, or the prevention of a medical prevention.





A publication of the
Center for Advanced Studies in Nutrition and Social Marketing
University of California, Davis

<http://socialmarketing-nutrition.ucdavis.edu>