

“WATCHING” WHAT WE EAT: WHAT TELEVISION IS MODELING

A Thesis submitted to the University of Arizona College of Medicine -- Phoenix
in partial fulfillment of the requirements for the Degree of Doctor of Medicine

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Class of 2015

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Acknowledgements:

I would like to thank Dr. Sarah Coles for guiding me through this research process and my family for their continued support.

Abstract:

Background: Obesity has transitioned from an individual health concern to being a national problem with almost two-thirds of the adult population in the United States now overweight or obese¹. Television potentially provides a medium in which to model healthy and unhealthy behaviors to millions of viewers each week. Although there is no quick solution to obesity, promoting and normalizing healthy lifestyles in today's most viewed shows may be one tool to help combat an obesogenic lifestyle.

Research Question: To what degree do today's most popular sitcoms model healthy and unhealthy behaviors?

Methods: A scorecard with 11 behaviors (6 healthy and 5 unhealthy) was created using publically published guidelines from the Center for Disease Control (CDC)^{1,2,3}, World Health Organization (WHO)⁴, and the United States Department of Agriculture (USDA)^{5,6}. The top three sitcoms for the 2013-2014 season, as determined by TV Guide, were viewed and analyzed by one evaluator. These included The Big Bang Theory, The Millers, and Modern Family⁷.

Results: In total, 898 unhealthy behaviors and 532 healthy behaviors were portrayed. The Big Bang Theory demonstrated the most behaviors overall and had the most favorable ratio of healthy to unhealthy behaviors at 1/1.1, compared to 1/3.8 for The Millers and 1/3.2 for Modern Family. The most common unhealthy behavior viewed was beverage choice with 492 occurrences. One of the least portrayed healthy behaviors was moderate physical activity with only 47 instances. In two of the three shows, there were remarkably few examples of fruit and vegetable consumption.

Conclusion: Today's top three sitcoms expose their viewers to many healthy and unhealthy behaviors during the span of a 22-minute show. Significantly more unhealthy behaviors were portrayed than healthy behaviors. The most common unhealthy behavior centered on beverage choice. This is a behavior that can easily be adjusted to promote a healthier lifestyle. Additionally, food content could reflect more healthy choices. Television shows reach millions of viewers each week and may prove to be a useful tool in helping to reinforce and normalize healthy lifestyle choices.

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Introduction/Significance:

Background:

Obesity is one of the greatest challenges facing medicine today. It has transitioned from being an individual health problem to a national concern with almost two-thirds of the adult population in the United States being overweight or obese¹. In 2008, the medical care costs of obesity in the United States alone summed to over \$140 billion⁸, including direct costs for prevention, diagnosis, and treatment of obesity as well as indirect costs like decreased productivity, absenteeism, and premature death⁸. Obesity is becoming a larger risk factor for many disease processes, specifically heart disease, type 2 diabetes, asthma, and sleep apnea². As the prevalence of overweight and obese individuals increases at an alarming rate across all ages and ethnicities, sustainable healthy eating behaviors, physical activity, and decreased sedentary activities become increasingly vital^{9, 10}.

Millions of people tune into watch their favorite television sitcoms each week⁷. This is a huge opportunity to portray and normalize healthy living across all age groups. While there have been no studies that show healthy or unhealthy lifestyle choices depicted on television influence eating and exercise behaviors, there have been studies showing that violence and tobacco use are clearly influential. There is evidence that violence depicted in movies and television is associated with increased violent behaviors in children¹¹. Similarly, there is evidence that exposure to tobacco use in movies and television is also associated with an increased likelihood of tobacco use in adolescents¹². This project aims to assess how well, if at all, healthy living guidelines that are available to the public are portrayed in today's most popular television sitcoms.

Clearly, there is no quick fix to this significant public health problem. However, depicting healthy lifestyles in some of today's most viewed shows may be one tool to help combat an obesogenic lifestyle. Conversely, depicting unhealthy behaviors may reinforce these behaviors. Additionally, this strategy has the luxury of reaching millions of viewers every week. This study investigates to what degree primetime television incorporates healthy and/or

unhealthy behaviors into its storylines. We hope to initiate discussion on how these shows might positively influence the obesity problem as they enter millions of households each week.

Significance and Rationale:

After conducting a literature review using PubMed, no studies could be located that analyzed television programming content aimed at adults and across multiple series. The most similar study found was by Byrd-Bredbenner et al. that analyzed health-related content (HRC) shown in top prime-time network programs in 1998 aimed at children age 2-11 years old. HRC was defined as “visual or verbal information related to mental or physical health, medical treatments (e.g., medications, surgery), substance use (i.e. tobacco, alcohol, drugs), food/nutrition, body image, fitness/exercise, promiscuous sex or safety”¹³. One composite week of programming from October 1998 was assessed for an HRC scene’s topic, amount of airtime, characters involved, polarity of message (defined as positive/recommended behavior vs. negative/not recommended), and relation of health-related content to main plot line¹³. Investigators found an average rate of one HRC scene every four minutes. The most common HRC involved foods and alcoholic beverages. Smoking, drug abuse and promiscuous sex HRC was relatively limited. The HRC was usually not related to the main plot line and much of content involved negative health behaviors¹³. Although this study was the most similar to this project, Byrd-Bredbenner et al. analyzed only one week of programming aimed at children.

A 2009 article by Radnitz et al looked at 10 television programs shown on the Public Broadcasting System (PBS) targeted for children age four and younger. Investigators assessed total airtime for healthy and unhealthy food contents, and amount consumed and found that portrayal of unhealthy behaviors had almost double the amount of airtime¹⁴. Not surprisingly, this study also demonstrated a significantly higher rate of unhealthy excessive consumption versus healthy¹⁴. Of note, this study did not include physical activity.

Many studies analyze the relationship between television viewing time and nutritional intake or advertisements and body mass index^{15, 16, 17}. The American Academy of Pediatrics discourages any screen time for children two years old and younger and only 1-2 hours per day

for older children¹⁸. However, no studies were found that evaluated the content of the television shows for depiction of healthy lifestyles and it is unreasonable to expect that screen time will be completely eliminated. As the prevalence of obesity continues to increase, it becomes critical to understand the social context of our obesogenic society, the impact of media, and to find ways to encourage healthy living. We aim to analyze the content of television as a first step in exploring the concept of using these productions as tools to reinforce healthy behaviors and minimize unhealthy behaviors.

For this portion of the study, the top three most-watched sitcoms were chosen for analysis. Sitcoms in particular were chosen because, according to one source, they portray situations that may happen in every day life¹⁹. This may make sitcoms most relatable to viewers. The top three most-viewed sitcoms were chosen for this study specifically because they are watched by millions of viewers each week.

Research Question:

Are healthy lifestyle choices as recommended by the Centers for Disease Control and Prevention (CDC)^{1, 2, 3}, World Health Organization (WHO)⁴, United States Department of Agriculture (USDA)^{5, 6} incorporated and reflected in today's most popular sitcoms? If depicted, how often are they shown? Alternatively, are unhealthy behaviors portrayed and with what frequency?

Goals:

This project aims to analyze what health-related behaviors are modeled on today's top television sitcoms. The frequencies of both healthy and unhealthy behaviors were evaluated. Ultimately, we hope to initiate further discussion of how television shows might be used as a strategy to reinforce healthy behaviors.

Research Materials and Methods:

Inclusion Criteria

For this study, we included the top three, most-watched sitcoms of the 2013-2014 season as determined by TV Guide⁷: The Big Bang Theory, Modern Family, and The Millers. The genre of sitcoms was chosen because they portray day-to-day life scenarios. Viewers may be able to relate more to this genre than to drama or action television shows with unrealistic characters and plots. By choosing the most-watched sitcoms, this study assesses shows that reach the most viewers and potentially have the most impact with a combined 49.4 million viewers⁷. In fact, The Big Bang Theory had the most viewers of all television series across all genres by a surplus of one million viewers⁷. The 2013-2014 season of each sitcom was viewed and scored for how well they reflect and portray the CDC, WHO, and USDA recommendations, using the scorecard outlined below (Appendix A).

Creating the scorecard:

The scorecard was created to objectively identify healthy and unhealthy behaviors depicted in each of the three sitcoms evaluated by this study. Publically available recommendations published by the World Health Organization (WHO)⁴, choosemyplate.gov (a publication from the United States Department of Agriculture)^{5,6}, and the Centers for Disease Control and Prevention (CDC)^{1,2,3} were used to develop the scorecard. It was essential to this project that the guidelines used were publically available; to create change, these recommendations would need to be readily accessible to writers and producers of these shows.

The scorecard includes recommendations regarding nutrition and physical activity. Although portion size is an important component to a healthy diet, it was not included in the scorecard because there was no objective way to measure this component. Instead, this project focuses on the composition of the food being portrayed.

The scorecard was divided into 2 sections: healthy and unhealthy behaviors:

The healthy behaviors section of the scorecard contained six components including portrayal of:

- 1.) Consumption of fruits
- 2.) Consumption of vegetables
- 3.) Drinking water, milk, or tea
- 4.) Consumption of lean meats
- 5.) Mealtimes free of electronic devices
- 6.) Moderate intensity physical activity (Moderate intensity physical activity included activities like brisk walking, taking the stairs, swimming, dancing, and playing sports.)

The unhealthy behaviors section of the scorecard contained five elements including portrayal of:

- 1.) Consumption of fatty foods
- 2.) Consumption of sweets
- 3.) Consumption of fast foods
- 4.) Consumption of beverages that were not water, milk, or tea
- 5.) Non-educational/non-work-related screen time (Non-educational/Non-work-related screen time included actions like watching television, playing on the computer, texting on a cell phone, and playing video games. Phone calls were not counted as screen time.)

The above scorecard components were compiled using recommendations available through public, non-password protected websites of these three organizations as noted above. It was important that these recommendations be easily accessible to the general population because we wanted to assess what information is being advertised to the public and how it is reflected in mainstream media. New recommendations that were only published in scholarly journals and not readily available to the public were specifically avoided.

Many of the dietary and physical activity recommendations used in this project are easily found on cdc.gov^{1,2,3}, choosemyplate.gov^{5,6} and who.int⁴. Non-educational/non-work-related screen time was chosen as one of the unhealthy behaviors. Multiple studies have demonstrated the relationship between children who watch more television and the increased risk of being overweight^{20,21}. Additionally, the USDA recommends no screen time during meals or snack times for all ages. Frequent family meals are associated with decreases in overweight and obesity and an increase in positive health-related behaviors^{22,23}. Family meal times in conjunction with limited screen time and adequate sleep in children were associated with a 40% lower prevalence of obesity²⁴.

Data Collection and Analysis

Every episode from the 2013-2014 season of each show was viewed and evaluated by one evaluator. In total, 24 episodes each of *The Big Bang Theory* and *Modern Family*, and 23 episodes of *The Millers* were analyzed. Of note, the opening credits were not included in the data collection. Since the opening credits are the same for each episode within a series and do not add any new additional content, the credits would contribute the same number of behaviors for each show and would proportionally increase each episode by the same amount. Each episode was evaluated for each behavior listed on the scorecard. If a food item or beverage could not be identified, it was not counted. For example, if a beverage was in an opaque cup and the contents were not identifiable, it was not included as it could be water or it could be soda. Both healthy and unhealthy behaviors were tallied and totaled at the end of each episode.

Only the behaviors of the main characters or supporting cast that interacted with the main characters were tallied. The actions of extras were not evaluated if they were not involved with a main character. Similarly, food and beverages on background props were also not counted. These methods of analysis were chosen because we wanted to focus where the viewer's attention would be drawn. Additionally, there were prop inconsistencies within a scene that would have made this analysis less objective. For example, a water bottle in the background of a scene focused on one character may disappear when the camera cuts away and then refocuses back on the character. A few seconds later, the water bottle may reappear because different takes of the same scene were used. This would affect how many times the healthy beverage choice of water would be counted.

Results:

Healthy and unhealthy behaviors were commonly depicted in the sitcoms evaluated (*Table 1 and Chart 1*). A total of 532 healthy behaviors were observed with 402 seen in *The Big Bang Theory*, 38 in *The Millers*, and 92 in *Modern Family* (*Table 2, Chart 2*). A total of 898 unhealthy behaviors were witnessed with 459 instances in *The Big Bang Theory*, 143 in *The Millers*, and 296 in *Modern Family* (*Table 2, Chart 3*). This resulted in a ratio of healthy to unhealthy behaviors of 1/1.1 for *The Big Bang Theory*, 1/3.8 for *The Millers*, and 1/3.2 for *Modern Family* (*Table 3, Chart 3*). The average number of healthy behaviors was 16.75 behaviors/episode of *The Big Bang Theory* with a range of 35, 1.65 behaviors/episode of *The Millers* with a range of 4, and 3.83 behaviors/episode of *Modern Family* with a range of 11 (*Table 4*). The average number of unhealthy behaviors was 19.13 behaviors/episode of *The Big Bang Theory* with a range of 23, 6.21 behaviors/episode of *The Millers* with range 17, and 12.33 behaviors/episode of *Modern Family* with a range of 23 (*Table 4*). *The Big Bang Theory* showed at least one instance of both healthy and unhealthy beverage consumption in 100% of episodes (*Table 5*)

	Big Bang Theory	The Millers	Modern Family	TOTAL
<u>HEALTHY BEHAVIORS:</u>				
Consuming fruits	51	3	20	74
Consuming vegetables	93	7	12	112
Drinking water, milk, tea	193	14	31	238
Portraying lean protein	7	3	2	12
Mealtimes free of electronic devices	35	3	10	48
Moderate intensity physical activity	23	8	16	47
<u>UNHEALTHY BEHAVIORS:</u>				
Portrayal of fatty foods	62	17	47	126
Portrayal of sweets	29	23	23	75
Portrayal of fast foods	64	0	4	68
Portrayal of non-water, non-milk, non-tea beverages	227	85	180	492
Non-educational screen time	77	18	42	137

Table 1: Total Number of Each Behavior by Show.

Breakdown of Shows by Behavior

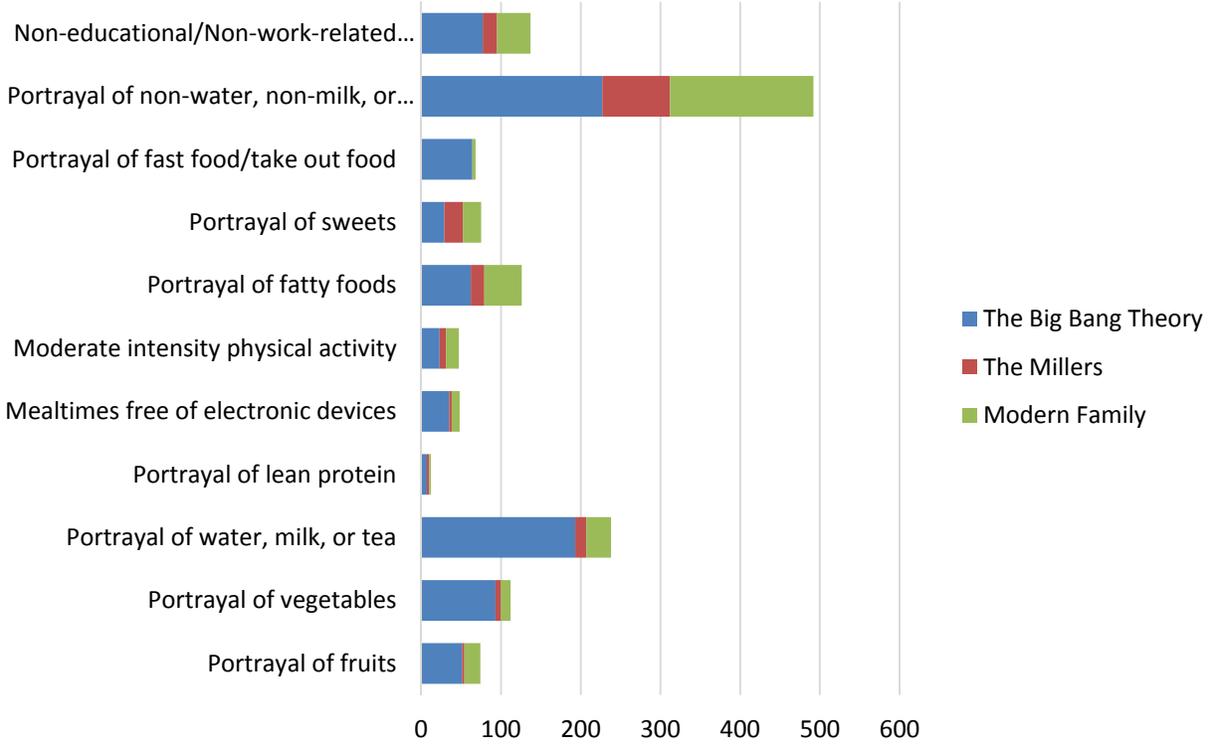


Chart 1: Breakdown of Shows by Behaviors.

	The Big Bang Theory:	The Millers:	Modern Family:	Total:
Healthy Behaviors:	402	38	92	532
Unhealthy Behaviors:	459	143	296	898

Table 2: Total Number of Healthy and Unhealthy Behaviors for the 2013-2014 Season by Show.

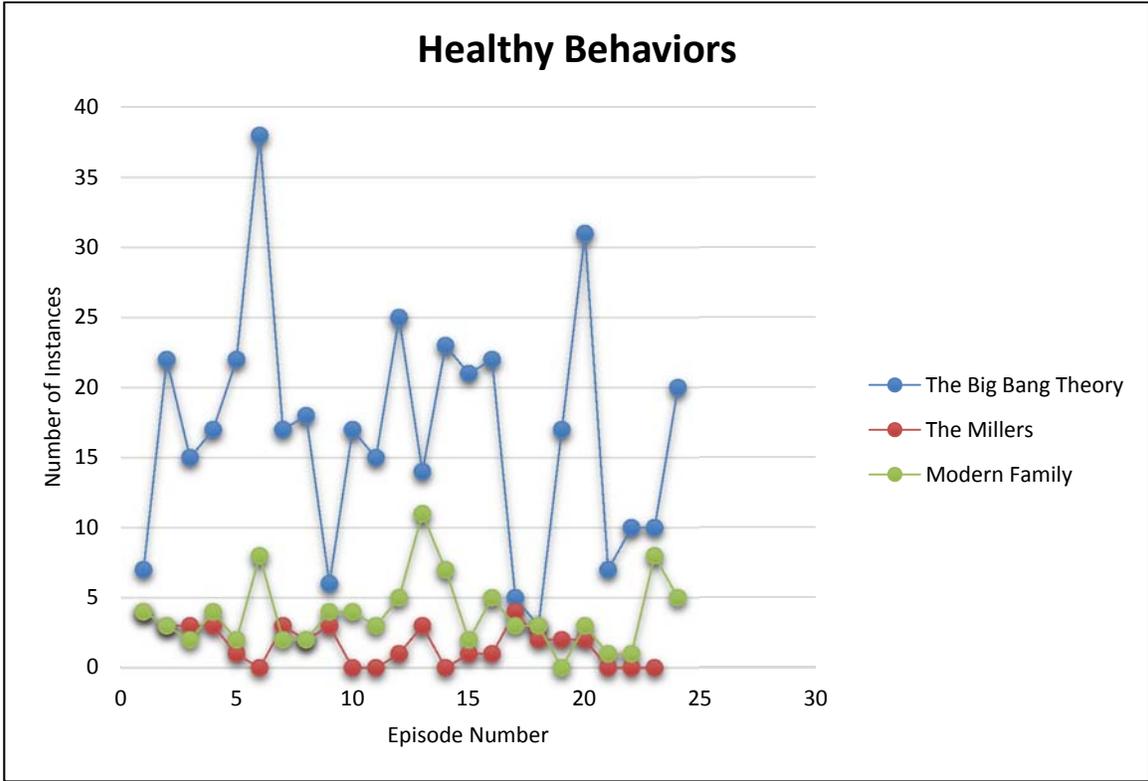


Chart 2: Total Number of Healthy Behaviors by Episode.

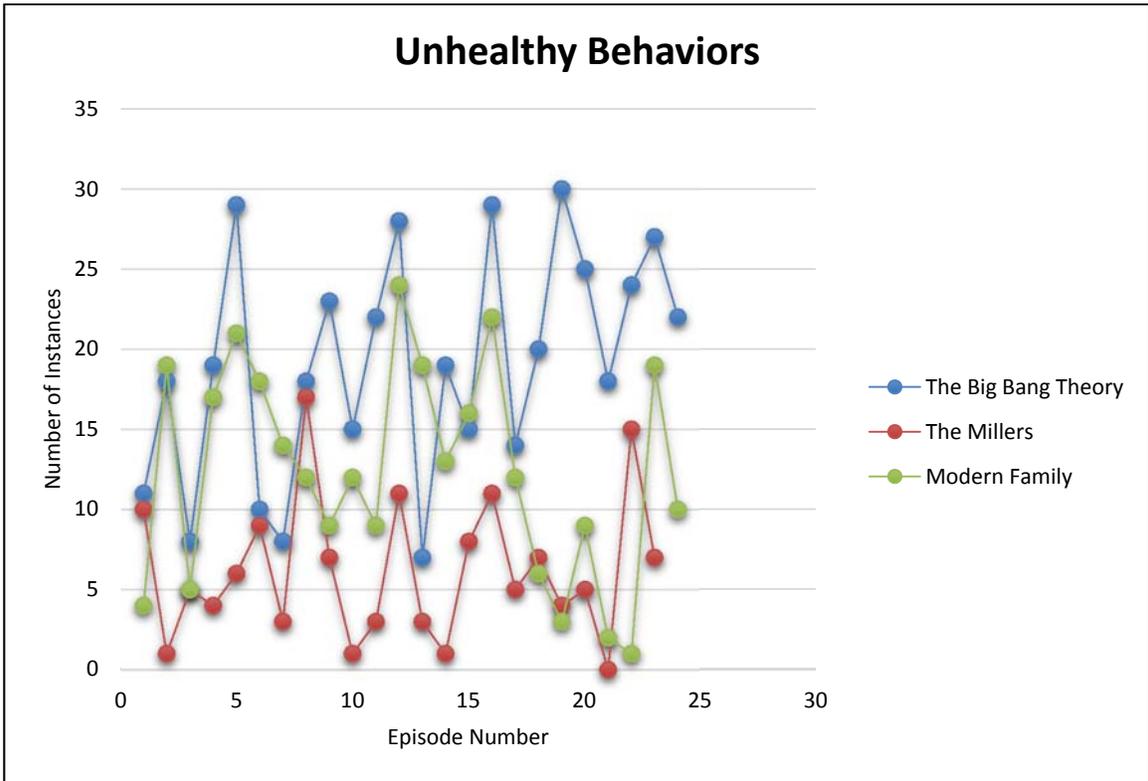


Chart 3: Total Number of Unhealthy Behaviors by Episode.

	The Big Bang Theory:	The Millers:	Modern Family:
Ratio of Healthy to Unhealthy Behaviors	0.88 1/1.14	0.27 1/3.70	0.31 1/3.23

Table 3: Ratio of Total Healthy to Unhealthy Behaviors for the 2013-2014 Season by Show.

	The Big Bang Theory:	The Millers:	Modern Family:
Range of Healthy Behaviors (Actual Instances)	35 (3-38)	4 (0-4)	11 (0-11)
Average Number of Healthy Behaviors	16.75	1.65	3.83
Range of Unhealthy Behaviors (Actual Instances)	23 (7-30)	17 (0-17)	23 (1-24)
Average Number of Unhealthy Behaviors	19.13	6.21	12.33

Table 4: Range and Average Number of Healthy and Unhealthy Behaviors Per Episode in the 2013-2014 Season by Show.

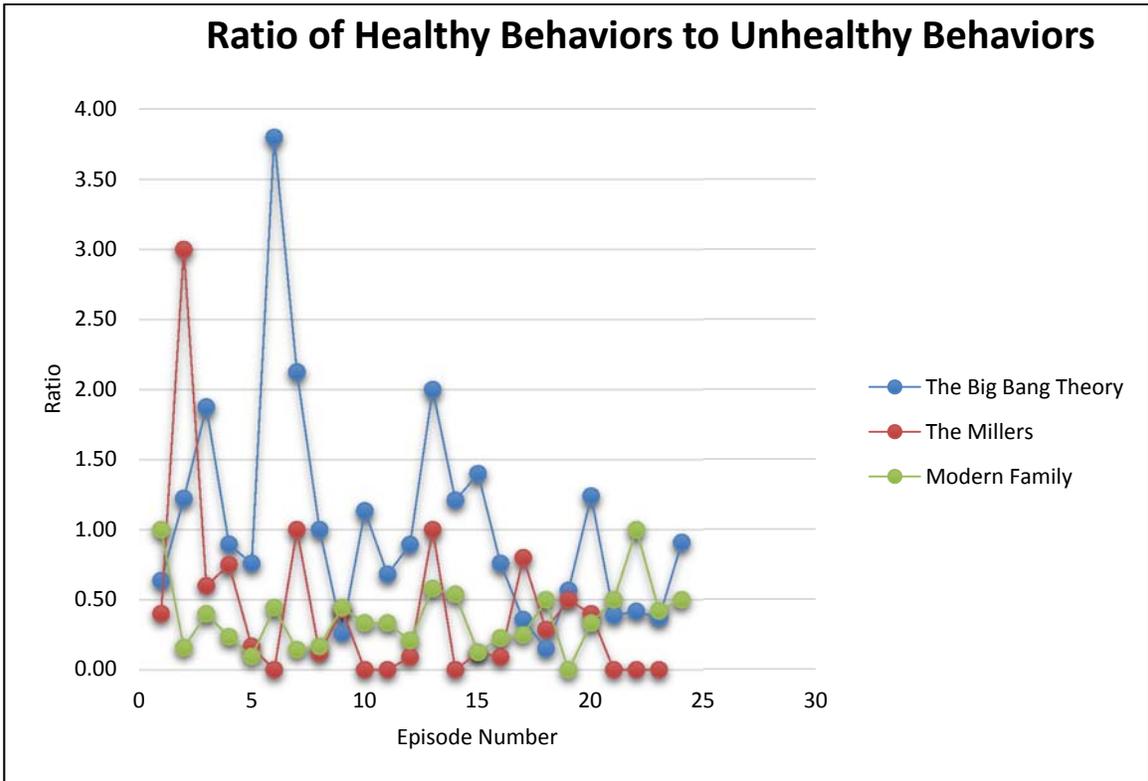


Chart 4: Ratio of Healthy Behaviors to Unhealthy Behaviors by Episode.

	The Big Bang Theory:	The Millers:	Modern Family:	Total:
Portrayal of consuming water, milk, or tea	24/24 (100%)	8/23 (34.8%)	16/24 (66.7%)	48/71 (67.6%)
Portrayal of consuming a non-water, non-milk, or non-tea beverage	24/24 (100%)	19/23 (82.6%)	23/24 (95.8%)	66/71 (93.0%)

Table 5: Frequency of Beverage Consumption By Show.

*Number of episodes that contained behavior/Total number of episodes
(Percentage of episodes that depicted behavior)*

Discussion:

Overall, viewers of these shows are exposed to many healthy and unhealthy behaviors, but generally more unhealthy actions. This was demonstrated in the ratio of healthy to unhealthy behaviors. The Big Bang Theory had the most favorable ratio at 1/1.14 (*Table 3*). Although this was significantly better than Modern Family (1/3.23) or The Millers (1/3.70), it still indicates that for every one healthy behavior, there is greater than one unhealthy behavior portrayed. In general, the ranges for healthy and unhealthy behaviors across all shows are large (*Table 4*). This indicates that the episodes vary greatly in how many behaviors are portrayed. Any one given episode may show many behaviors or very few, sometimes even none. However, the season as a whole portrays many healthy and unhealthy behaviors. Some episodes may have an emphasis on behaviors, while others do not.

The most common behaviors, by far, center on beverage choice. Less healthy beverages (those other than water, milk, or tea) were shown 492 times (*Table 1*) versus 238 times where beverages were identifiably water, milk, or tea. Interestingly, 100% of all Big Bang Theory episodes show at least one instance of both a healthy beverage choice and an unhealthy beverage choice. All but one episode of Modern Family portrayed an unhealthy beverage choice at least once (*Table 5*). This could be encouraging viewers to make poorer choices in beverage selection. Each beverage could easily be changed so as to depict a healthier option. For example, a tea bag can be added to a beverage in a mug. Less healthy drinks like juices in clear glassware can easily be swapped for water, with little impact on the plot line. Many studies have shown that increased intake of drinks sweetened with high-fructose corn syrup²⁵ or sucrose²⁶ are associated with increased calorie intake and body weight.

The portrayal of fatty foods could also easily be changed to reflect healthier options. The sitcoms demonstrated consumption of fatty foods 126 times (*Table 1*). Adding in vegetables or fruits would create a healthy behavior and likely have no effect on the plot line. Many of the 492 instances of unhealthy beverages and the 126 illustrations of fatty foods could be altered to demonstrate a healthy behavior to the millions of viewers each week.

In total, *The Big Bang Theory* depicted more behaviors than either *The Millers* or *Modern Family* (*Table 1*, *Table 2*, and *Chart 1*). It showed more than four times as many healthy behaviors as *Modern Family* and almost eleven times more healthy behaviors compared to *The Millers* (*Table 2*). *The Big Bang Theory*'s average number of healthy behaviors per show was significantly higher than its two counterparts at 16.75 healthy behaviors per show versus 1.65 behaviors per show in *The Millers*, and 3.83 behaviors per show for *Modern Family* (*Table 4*). Conversely, *The Big Bang Theory* also had more unhealthy behaviors, 459 instances compared to 143 moments in *The Millers* and 296 examples shown in *Modern Family* (*Table 1*). However, *The Big Bang Theory* had a significantly more favorable ratio of healthy to unhealthy behaviors, 1/1.1 versus *The Millers* 1/3.8 and *Modern Family*'s 1/3.2 (*Table 3*). Although *The Big Bang Theory* had more total number of unhealthy behaviors than the other two shows, in general, viewers of this comedy series are seeing fewer unhealthy behaviors for each healthy behavior (*Chart 4*). Conversely, *The Millers* and *Modern Family* depicted more unhealthy behaviors for each healthy behavior. This could possibly be harmful to the viewers by promoting unhealthy choices. On an episode-to-episode basis, *The Big Bang Theory* is more likely to depict more healthy behaviors (*Chart 4*).

Additionally, viewers are seeing these healthy behaviors in the context of a show where the main characters are well-educated scientists. It could be hypothesized that the viewers associate these healthy choices with higher education. While it is ideal to portray healthy behaviors, it is also necessary to depict characters of *all* backgrounds making these good decisions. Since not all viewers are Ph.D.-educated aerospace engineers or physicists like on *The Big Bang Theory*, it becomes even more critical for shows like *Modern Family* and *The Millers*, which portray more realistic, every day characters, to show more healthy behaviors. Conversely, it could also be hypothesized that the viewers are more likely to consider the unhealthy behaviors portrayed in *The Big Bang Theory* as acceptable because the main characters are well-educated. Therefore, it is imperative for all shows to portray more healthy and less unhealthy behaviors.

When specifically looking at food content, it is clear that *The Big Bang Theory* depicts more healthy options than the other two sitcoms. Many of the meals that occur in the cafeteria on *The Big Bang Theory* are easily identifiable as either a sandwich with lettuce and tomato or a large salad. This resulted in *The Big Bang Theory* showing more fruits, vegetables, and lean proteins throughout the show (*Table 1, Chart 1*). Conversely, almost all of the meals that took place around the home coffee table involved various fast food/takeout food. This led to *The Big Bang Theory* contributing the most of fast food/takeout food instances (*Chart 1*). Although *The Big Bang Theory* showed more complex eating habits by mixing fast food/takeout food with simpler choices like a sandwich, this may reflect a more realistic pattern of eating. This could cause viewers to relate more to the eating behaviors on *The Big Bang Theory* than the other shows and potentially make *The Big Bang Theory* more influential. Conversely, *The Millers* did not show any fast food/takeout food and *Modern Family* only had four examples of this behavior (*Table 1*). In fact, *The Millers* depicted very few eating behaviors at all. Interestingly, *The Millers* almost always showed a bowl of fruit sitting on the counter, but no one ever ate it.

Physical activity and exercise was rarely shown on all three shows. A mere 47 instances were depicted in all shows (*Table 1*). *The Big Bang Theory* contributed 23, 8 for *The Millers*, and 16 for *Modern Family* (*Table 1*). Although the CDC recommends an average of 30 minutes of moderate intensity exercise five days per week for adults³, this healthy behavior had one of the lowest depiction rates of healthy behaviors (*Table 1, Chart 1*). Even though there may be filming constraints (i.e. filming on a set that minimal space), physical activity could still be incorporated to these shows by changing settings. For example, instead of a main character having a telephone conversation sitting on the couch, they could be walking the family dog while talking on the phone. Since physical activity was rarely shown, this is an area with great potential for improvement.

This study found that many healthy and unhealthy behaviors are depicted in today's top sitcoms and a significantly greater proportion of these are unhealthy behaviors. The results found in this study echoed the same general findings as other research in this field. Radnitz et

al. in 2009 demonstrated more unhealthy excessive consumption. Although portion size was not assessed in this project, we did find more unhealthy consumption (*Table 1*). Byrd-Bredbenner et al. showed that the most common health-related content (HRC) involved food/nutrition and alcoholic beverages. We did not look at beverage content beyond water, milk, or tea; however, we did find that beverage choice was overwhelmingly a common behavior (*Table 1*). Byrd-Bredbenner et al. also demonstrated a predominance of negative/not recommended versus positive/recommended HRC. Similarly, we found 532 healthy behaviors demonstrated compared to 898 unhealthy behaviors (*Table 2*).

This project brings to light how subtle choices in prop type (a glass of water versus a glass of juice), prop placement (fruit in a bowl on the counter versus fruit on a plate), and scene setting can drastically affect how the viewer perceives the scene. This pilot study demonstrates that there are many behaviors, both healthy and unhealthy, being modeled on today's most popular sitcoms. Although the opening credits were not counted in the overall totals, it should be noted that they also have the potential to impact the viewer. Any healthy or unhealthy behaviors portrayed in the opening credits are depicted in 100% of the episodes. As shown by the studies looking at the influence violence in the media on children¹¹, it is plausible that these actions may encourage and reinforce these behaviors in the American adult population. Many of these proposed changes depicting healthier behaviors would have little to no effect on the plot line of the show, but could potentially have an impact on the millions of viewers by trying to normalize healthy behaviors.

Limitations of the Project:

Even though this study looked at the behaviors and behaviors modeled on television, only the top three sitcoms were considered and the opening credits were not assessed. While this sample size includes some of the most viewed shows airing on television today, it misses other genres. Millions of viewers tune in each week to watch these sitcoms, but audiences also relax by watching reality shows, television dramas and thrillers, to name a few. These other types of shows also reach millions of households and potentially influence behaviors.

This project only looked at specific nutritional and physical activity recommendations. Although qualitatively the portion sizes appeared to be large, portion sizes were not included. While it has been well documented that portion sizes have steadily increased over the last 40 years and are a large contributing factor to the obesity problem²⁷, this component was not included in order to maintain objectivity.

Future Directions:

This study has quantified specific healthy and unhealthy behaviors shown on today's top three sitcoms. Viewers of these television shows are exposed to many instances of healthy and unhealthy behaviors. Future studies are needed to assess whether this is a theme across genres of television, specific to sitcoms, or specific to the three sitcoms we chose to analyze. This concept could also be applied to other forms of media including movies and documentaries.

It remains unclear if healthy behaviors and unhealthy behaviors modeled on popular television shows affect actual behavior. Studies of violence in the media and the effect on behavior indicate that it is likely actions and behaviors on television can encourage and reinforce these behaviors in the American population¹¹. Future studies are needed to assess the relationship between behaviors portrayed in the media and real life behaviors in regards to nutrition and physical activity.

There are also many other behaviors that could also be assessed. Previous studies have shown that portion sizes have increased over the last 40 years²⁷. It is unclear, however, if portion sizes modeled on television have any influence of the viewer's portion size. Future studies are needed to determine this relationship. Additionally, other behaviors like types of physical activity, portrayal of sedentary behavior and a more detailed evaluation of food and beverage content including alcohol warrants future studies.

Although this study demonstrated that significantly more unhealthy behaviors are portrayed, consequences of unhealthy behaviors were not assessed in this study. Future research is needed to analyze how, if at all, the sequelae of unhealthy lifestyle choices is portrayed and if mainstream media can influence a viewer's choice. Since unhealthy behaviors can lead to obesity, the attitude towards obese characters and the overall stigmatization of obesity could be assessed.

Conclusions:

Viewers of today's top three sitcoms are exposed to considerable healthy and unhealthy behaviors during the course of a 22-minute show. This research highlights that the most common types of behaviors shown are centered on beverage choice and lack of exercise. Fortunately, these unhealthy choices can easily be adjusted to promote healthy behaviors. Additionally, some shows like *The Big Bang Theory* expose viewers to a more favorable ratio of healthy to unhealthy behaviors. Ultimately, the goal should be a ratio much higher than what we see now. Trying to eliminate screen time and watching television may not be feasible in our society. However, we can make better use of television to promote healthy living for the millions of viewers each week. This may prove to be a useful strategy in helping to reinforce and normalize healthy lifestyle choices.

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Appendix:

Appendix A: Example Scorecard

	<u>Episode 1:</u>	<u>Episode 2:</u>	<u>Episode 3:</u>
<u>Healthy Behaviors:</u>			
Portrayal of fruits			
Portrayal of vegetables:			
Portrayal of water, milk or tea:			
Portrayal of lean protein:			
Mealtimes free of electronic devices:			
Moderate intensity physical activity			
TOTAL:			
<u>Unhealthy Behaviors:</u>			
Portrayal of fatty foods:			
Portrayal of sweets:			
Portrayal of fast food/take out food:			
Portrayal of non-water, non-milk, non-tea beverages:			
Non-educational/Non-work-related screen time:			
TOTAL:			