

Fat-Proofing Halloween, Thanksgiving, and Christmas: Exploring Behavioral Solutions to Holiday Weight Gain

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Abstract

People overeat during the holidays and gain on average 1.1 pounds from Thanksgiving to New Year's Eve. Participant observers compiled over 100 different insights on factors cause people to overeat during the holiday season. Each trap that was identified was paired with some advice from that insider on how to prevent the overeating. Insights were categorized based the social aspects of the meal, the influence of proximate others, and the layout of the food. These indulgent insights will be useful to help prevent people from overeating during the holiday season and has the potential to prevent weight gain and health decreases that are paired with the winter months.

Keywords: Holiday weight gain; Weight loss; Thanks giving; Christmas; Behavioral; Holidays; New years; Obesity.

Introduction

Not only is there an association between indulgence and overeating during the holidays – people eat significantly more during the holiday times [1-3]. Many holidays are consumer-based and deal with being able to provide for oneself and family [4,5]. Since it is known that these special occasions are traps to overeat [6], the question becomes: 1) what leads to overeating during holidays? and 2) what behavioral interventions will be most effective in reducing this? Using participant-observation methods, this research aims to identify the causes of these traps and solutions.

Overindulgences are part of human nature [7]. Throughout history there has been reason for humans to overindulge for survival as well as comfort. In today's world overindulgences can be seen during the holidays. People are likely to be eating more and drinking more because overindulgence is seen as part of the holiday season and a necessary part of celebration [8,9]. There is a large-scale impact from these overindulgences that occur during the holiday season. The increased food intake greatly decreases the nation's overall health. People on average gain weight during the holiday season [10-15,2], and are more likely to suffer from heart attacks; likely due to an increase in alcohol and heavy food consumption [16,17].

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There is a need for a solution to the common traps of the holiday season. How to avoid holiday indulgences is often talked about in an off-hand manner but hardly have solutions been gathered and supplied. There is a recent realization that the food itself is not in control of the over indulgence but often it is an environmental factor that plays a role in the one's consumption. The setting of how food is presented and how people interact with food is largely influential in how a person eats [18].

We have asked a group of inside sources to identify their traps and solutions for them with regards to holiday eating. With an understanding of the traps that people commonly fall into during holidays and celebrations we can better assist people not to overeat. The effects of overeating during the holiday season are both immediate and long term. One might feel disgust or anger at oneself for overeating in the moment, but the weight gained over the six week period is long lasting and has implications of greater health risks overall. Being able to avoid these health risks and self loathing would be a step in the right direction towards healthier living all year round [19].

This paper aims to take these traps and tips and apply many of them in a new way, to these meals that are overly indulgent and occur relatively infrequently. Meals such as Thanksgiving, birthday parties, Christmas, Passover, these celebrations dur-

ing which people forget to have self restraint and need to be mindlessly reminded not to overindulge. We took insights from inside sources on the traps that people fall into during these celebratory days, any big meal. What causes people to overeat and how can they mindlessly be tricked out of overeating?

Background

There is an argument, presented by Skinner (1966), that overindulgence and overconsumption has been ingrained in our behavior through evolution. People at one point in time didn't know when they would eat next and found themselves eating as much as possible when food was present. The instinct to overindulge as a mechanism for survival is still prevalent in today's society even though there is no longer a need for most people. Although it might be in human kind's nature to overindulge from time to time because of engrained evolutionary mechanisms, there are simple ways to prevent the discomfort that one might associate with the common holiday celebration.

The association with overeating and the holiday celebration may not be as evolutionarily based as Skinner's presented argument, but there is a strong connection between overindulgence and celebratory meals [20,4]. Emphasize the relationship between indulgence and cost. The higher the cost the higher the indulgence will be [20]. Cost being either monetary or timely, for holiday celebrations is always high therefore the indulgence will naturally be high as well. [4] Takes another approach and focuses on the consumer based rituals that make up many holidays. Because there is such a focus on ritual and giving in many of the holidays celebrated their becomes an expectation of indulgence on many levels. This association and expectation extends, in some cases unknowingly, into the food consumption as well as other levels of consumerism. [8] Focuses on how the holiday season is a time of overindulgence and life enjoyment. There is an emphasis on drinking and eating and enjoying life these rituals all become part of an overindulgent time [8].

With the over indulgence of the holiday season comes health consequences. Many studies have found that there is an increase in weight and a general decrease in health during the holiday season or winter months [10-15,2]. During the holidays people are known to consume significantly more food and alcohol. [1] Found that given a food diary from Thanksgiving everyone consumed more on the holiday itself, men and women, dieters and non dieters, the only difference was how much more they consumed. It is usually assumed that people will gain approximately five pounds (2.27 kg) from Thanksgiving to New Year's Eve [2]. Although the total weights that people gain is less than the mythical five pounds and closer to 1.1 pounds (.5 kg) [13,2], this still represents a significant increase in body weight over that period of time. [2] Found that although the 1.1 pound (.5 kg) gain over the six week period between Thanksgiving and New Year's seems small, it is not reversed during the Summer months and may represent a significant impact on the weight gained in adulthood. Hull (2006) found that people did not necessarily gain weight, but they showed an increase in body fat and therefore an overall decrease in health predicted to be caused by the overconsumption of heavy foods during the holiday season. This finding showed that although there may not be an increase in weight there can still be a general decrease in health.

Studies have also shown that as a result of the increase in consumption of heavy foods and alcohol during holiday times there are long lasting health consequences such as an increase

in ischemic heart disease related deaths [16]. This study found that even in places where the weather was mild during the winter, such as Los Angeles, California, deaths caused by heart attacks increased. There was no control for other factors such as stress of the holidays, but the researchers attribute at least part of the increase of these deaths to the increase in overconsumption of indulgences; largely caused by the increased number of holiday celebrations during that time of the year [21].

The over consumption that occurs during the holiday season is such an issue and is causing great enough health risks that it must be addressed. However, many of the reasons one overconsumes are mindless [22]. A person does not purposefully eat until he is uncomfortable he mindlessly does so. No matter how many times a person is told that he will serve himself too much on a big plate, he will continue to do it [23]. People are trained from young ages to focus on external cues to denote fullness and satiety [24]. Education alone is not powerful enough to combat the rituals that have been engrained in a person from childhood and those things that we mindlessly do.

Often time people complain of being full but still continue to eat. This phenomena is largely due to people's reliance on external cues for their being done [25]. People's consumption amount is largely affected by things as simple as the size of the plates [25,26] or the location of the buffets [27]. Overall it has been found that people's reported level of fullness and satiety is based largely on what they perceive themselves to be eating and not what they actually consumed [28].

Methodology

To investigate this, it was important to explore a wide range of current best practices in work sites. This was accomplished through a combination of participant observation research and inside source interviews [29]. Eighty-nine volunteers were recruited through a collegiate course on behavioral economics and consumer psychology.

Prior to a major holiday dinner – American Thanksgiving – they were asked to participate in a Thanksgiving dinner. Using a social anthropological approach, these individuals were trained to observe the physical and social antecedents that appeared to influence – either knowingly or unknowingly – the way individuals ate. In addition, using inside sources interview methods, they were also instructed to interview the major preparer of the meal to elicit ideas they had about what might influence what people to overeat.

In order to not bias, or restrict their observations, no coding criteria or premeditated categorization of potentially influencing factors was presented to the participant observers. Following their experience, these participant-observers were asked to elaborate on the three efforts they observed that they believed had the biggest impact on encouraging overeating. Their insights were analyzed by three independent coders to determine how to best categorize their insights in a way that would be most illuminating.

Analyses by three independent coders indicated there were no significant differences between the practices used in the firms of interns and those used in the firms of more experienced employees, these best practices were aggregated. These coders next grouped the practices according to the suggested framework.

Results

The 164 insights obtained from the inside sources can be broken down into two main categories: social influences (n=48), and food influences (n=116) that make one overindulge. Overin-

dulgences at holiday and celebratory meals are all over, whether one is aware of them or not. These inside sources helped to identify the different traps and offered advice on how to avoid them (Table 1).

Table 1: Social influences that lead people to overeat. Insights and advice to solve the problems, 29.27 percent of all advice collected.

Timing	Broad observation	Insight	Advice
Planning (9.15%)	Justifications of the large caloric intake	People associate unhealthy foods with relaxation.	Break this association by eating healthier on vacations and breaks.
		People's earlier decisions regarding food and exercise affected how much they ate	Have everyone eat a breakfast together to prevent people from being hungry and snacking all day.
			Offer healthy foods first so that the over-hungry people serve excess of the healthy items.
Pre-Dinner (4.9%)	Making Dinner	Snacking at food while preparing food lead the cook to be full before dinner even started.	Chew a piece of gum while preparing food to reduce the overall amount of snacking.
		Tasted everything because the chef had pride in what was made.	Have the cook emphasize the food that is healthy.
	Distractions	Television makes people prone to inattentive eating.	Only offer healthy snacks in front of the TV. Do not have snacks in front of the TV, or do not refill bowls as they get empty.
		People who were distracted served themselves more food.	Serve food in a location that is not conducive to conversation and limit distractions.
Dinner (15.24%)	Serving the food	People took more helpings when food was on the table.	Have the leftover food or serving dishes in the kitchen.
		People accept food when it is offered to them.	Acknowledge that there is the option to deny food. Pass healthy options around the table as well as the unhealthy options.
	Interactions	People who talked during dinner ate less.	Have an engrossing conversations encourages less.
		One person still eating led people to eat more food.	Leave the food in the kitchen to prevent people from serving themselves more food out of boredom.
		Parents commented on how many times children get up for more food.	Have this pressure constantit makes more people aware that they are being watched while eating and will reduce the number of extra helpings that person takes.
		Parents ate the leftovers from their children's plates.	Have the children eat before the adults. This way parents would help the kids finish and then serve themselves knowing that they'd already eaten some.

Social influences have to do with the social interactions that surround the meal preparation and the meal itself (Table 1). This category includes the planning of the meal (n=15), the social interactions that occur before a meal (n=8), the way the food is served (n=?), and the interactions one has during the meal (n=25). The planning of the meal is the preparation and thought that goes into the celebration before the actual day of the meal. People generally will put forethought into these celebrations and whatever this thought is, it is influencing how people are eating. The planning of the meal encompasses people's justifications for large caloric intakes. We found that people often come up with excuses for eating large quantities of food, whether it's that they are going to exercise extra the next day or not eat in the morning, these excuses lead people to change their eating behaviors during the actual dinner.

Beyond the planning period, there is the actual before dinnertime of the meal, the pre-dinner time period. This is when appetizers are brought out, social interactions are heavy and common, and generally there is a lot of snacking going on. One common interaction that causes a distraction from eating is television. Like television, other distractions can lead a person to snack more than usual. Even just being surrounded by food

can cause someone to snack more frequently than others. Multiple insiders noted that the cook for the celebratory meal often sat down full already because of all the taste testing and snacking the cook had done before sitting down.

Once at the dinner table the interactions that cause people to overeat continue. How food is served can cause people to over eat. Many people noted that when food was passed around the table people were unlikely to skip an item or say no. This is also true for if food is on the table, people become more likely to take more servings according to our insiders. Beyond simply how the food is presented we noticed that interactions with other people at the table also influenced how much a person ate. Those people that talk generally proved to eat less and seemed less focused on their food during the meal. There is also the social interaction between parents and children. Whether parents are picking food off of the plate of their child and finishing the leftovers, or telling their kid not to get a third helping of something, parents seem to have a strong influence on the eating behavior of their children (Table 2).

Table 2: Food influences during the planning period, drinks, and pre-dinner, 15.24 percent of all advice collected.

Timing	Broad observation	Insight	Advice
Planning (6.10%)	Amount of food being made	People brought too much food.	Make a specific list of what people should bring.
		There was a lot of alcohol and not many other options.	Reduce the amount of alcohol open and visible during the event. Have a water pitcher on the table.
Drinks (4.27%)	Drink Choices	Moderate drinkers ate less than either non-drinkers or heavy drinkers and were more likely to leave food on their plate.	Drinking reduced the focus from the food and eating, and made people more sociable.
		Heavy drinkers tended to eat more as they drank more.	Keep track of the amount of alcohol being consumed.
		Those who drank water before the meal ate less.	Water will make one feel fuller and reduce the likelihood of overeating.
		People ate a full meal's worth of calories in appetizers.	Serve healthier appetizers that do not add so many calories.
Pre-Dinner (4.9%)	Snacking and Appetizers	Pre-meal snacks, such as crackers and cheese were abundant.	
		People who finished soup before the meal claimed being full and ate less during the meal.	Soup can be a healthier alternative to some appetizers and therefore can help fill people up before a meal to reduce the overall calories consumed.

Food influences have to do with the physical layout of the meal, where plates are situated, what size the plates are, and what types of foods are being presented. These influences break down chronologically through the meal, from the planning of the meal (n=10), the drink (n=7), and the pre-dinner time period (n=8) (Table 2), to dinner itself (n=72) (Table 3), followed by dessert (n=18) and post-dessert (n=1) (Table 4). Planning of the meal is organizing how much food there is going to be, who is bringing food, and establishing what is happening during the day. This category mostly had insights to do with how much food people had on holidays. Generally the consensus was that there was too much.

Another aspect of the meal that is important before actually sitting down to eat is the beverage options. Often times at celebrations it was noted that there was an emphasis on alcoholic options or on calorie dense sodas; there was a lack of water. During this time, before the main meal, there were also lots of appetizers and snacks available to party goers and diners in many cases. Most of the time these pre-dinner snacks tended to be high calorie options. In fact, one source noted that it was easy to consume more than a meal's worth of calories without noticing it just by eating the appetizers (Table 3).

Table 3: Food influences on overeating that occur during the main meal, 43.90 percent of all advice collected.

Timing	Broad observation	Insight	Advice
Dinner (43.9%)	Clean plate mentality	No matter how much food people took they cleaned their plate.	Serve dinner on smaller plates to limit the amount of food they can have on their plates.
		Idea of the meal was to get stuffed.	Have an announcement that states "do not feel pressure to finish it all, leftovers are welcome" to prevent people from feeling like they need to overindulge.
	Serving the food	Sitting at the table and being able to see the buffet caused them to eat more.	Suggest moving the buffet just out of sight of the table, or perhaps keep it in the kitchen.
		People served themselves more of the first few items in a buffet.	Load the front end of the buffet with the healthy options.
		Nobody had room for the vegetables on their plate.	Serve vegetables to the table first and the heaviest dish last.
		People served themselves more food overall in buffet style setting.	Have a picture of the 'perfect' plate of healthy meal and encourage people to aim for that. Start with a salad buffet to keep people eating more healthy food.
		People take a set number of spoonfuls of foods regardless of the size of the serving spoon.	Put smaller serving utensils in the less healthy dishes and bigger utensils in the healthy dishes.
		People took more of the items that were served on large platters or foods that had multiple platters.	Serve vegetables and healthier options on the bigger platters and the unhealthy dishes on smaller platters Make the dishes that have repeats the healthier options such as salads or vegetables.

Timing of the meal	There was no pause in eating.	Take food-free break between meal courses.
	People ate hot things first and left cold things, like salad, for last	Wait until people are done eating the salad or cold vegetables before bringing out the hot dishes.
	Nobody ate fruit instead of dessert when it was served with the desserts.	Serve healthy options first, then heavier options.
Variety of foods	Unhealthy options were ignored if out of sight.	Purposefully stash the unhealthy things just out of sight or reach.
	Few healthy options were available during the meal.	Have healthy options or make the options offered healthier.
	There were over ten different items to choose from.	Decreasing the amount of variety would prevent people from trying to try everything.
Amount of food	Too much food on the table to possibly eat it all.	Only put what you think people will eat, or even a little less on the table.
	Despite the amounts of food eaten that day there were still huge amounts of leftover foods.	Make the leftovers healthier by including recipes for healthy uses of the foods, like turkey vegetable soup.

The dinner itself poses the greatest number of traps to overeat (Table 3). With the total insights of our sources totaling 72. There is a mentality that some parents emphasize and people adhere to that is known as the clean plate mentality. This is, simply put, where one eats to clear the plate. The clean plate mentality is a cause of overeating, especially in situations where one puts too much food on his plate, such as holiday meals.

Holiday meals are traps for over eating not only because people clean their plates but also because the method of serving and the timing of the meal encourages overeating. People do not often refuse to serve themselves food, it is most common for people to accept food that is offered to them noted

many of our insiders. Different methods of serving food can lead to overconsumption, including passing food around as well as buffet lines. People are prone to serving themselves more of the first items in buffet lines and are likely to be influenced by the person who is in front of them. People are also more likely to get second or third helpings of food if it is visible.

In addition to the different serving methods of food, the sheer amount of food present influences people's consumption amount. The more food there is the more likely people are to eat more. This is also true for variety of food. The more variety of food there is the more likely people are to feel compelled to try many types of foods and therefore eat too much (Table 4).

Table 4: Food influences that occur after the main meal, 11.56 percent of all advice collected.

Timing	Broad observation	Insight	Advice
Dessert (10.98%)	Amount of dessert	There was more dessert than there should have been.	Prepare the proper amount of dessert for the party size.
		The party got new plates for dessert.	Use smaller plates for dessert to help curb how much people take.
		If people cut their own pieces of dessert they are likely to serve themselves more.	Pre-cut pieces of dessert into standard small portions.
	Eating when full	People agree to eat dessert even though they are full.	Set the pie in the middle of the table and have people serve themselves when they are ready for pie.
			Take a 20 minute break between the end of the meal and dessert to let people rest.
			Wait until people are hungry again and give them the option to eat dessert then or later.
			Make a menu and make sure people know there will be dessert.
dinner influenced dessert consumption	What sides people ate influenced how much dessert they ate.	Having sweeter savory foods, such as sweet potatoes, decreased dessert consumption.	
Post-Dinner/Post-Dessert (0.06%)	Plans	Most people lie down or watch TV after indulging in a big meal.	Plan activities for after the meal.

The last areas for overconsumption are dessert and the post-dessert period. With 18 different observations of traps for overeating dessert poses many different challenges to the savvy consumer. Like with dinner, the sheer amount of dessert is likely to lead to overconsumption. This is often due to the fact that at holiday meals there is more than enough dessert and often too much served. In addition to the sheer amount of desserts served, often the partygoers are provided new plates. If these plates were smaller it would help reduce consumption. People also suggested that cutting their own piece rather than being served a standard sized piece would help to prevent them from overeating.

The real trap of dessert however is eating more when one is already full. People noted that regardless of how frequently their fellow celebrators were saying they were full or could not eat more many of them still managed to eat dessert. Some noted that those who ate sweeter things during the main meal were less likely to eat dessert. However, for the most part the consensus was that people ate dessert even if they had already eaten too much for dinner. One savvy insider suggested that forming plans for after dessert, such as a board game or going on a walk, would prevent people from overeating and then laying down in their food coma like state.

General discussion

It is clear from the inside advice given (Tables 1-4) as well as the general weight gain seen in the population [30] that there are many different traps to overeating during holiday meals. Regardless of the motivation for overeating, whether due to fasting [31] or evolution [7], there must be solutions to avoid the tendency to overeat (Tables 1-4). From our inside sources a key to understanding overeating is first noticing and acknowledging the traps that exist. After that there are mindless and simple tips that can effectively prevent someone from falling into many different traps. These traps can be broken down into three main themes, distractions and interactions (n=?), serving location (n=?), and variety and amount (n=?).

Distractions can lead people to overeat or over-serve themselves food. People who were distracted while serving themselves served themselves more. Whether a person is distracted by a television or by someone trying to continue a conversation at the buffet line, it does not matter, the distraction lead there to be more food on the plate. The people that surround one while eating and the distractions that are present can either increase or decrease the amount of food one eats by a significant margin [23]. Serve foods in a distraction free environment to prevent over-serving (Table 1). Do not have a TV on where the buffet line is, or set up the buffet line so that it is single file to reduce the amount of conversation and therefore the amount of distractions.

Like these social influences, the food itself also influences overconsumption. There are many aspects of a meal that lead people to overeat. Television can be a trap when it comes to overeating. Television leads one to be distracted and can cause one to eat more than one realizes [23]. Having appetizers or snacks in front of the TV can be a trap causing people to eat more of them than they might have intended to. A simple solution to this problem would be to not have snacks in front of the TV or only serve extremely healthy snacks in front of the television in hopes that if a person is going to overeat, they might as well overeat healthily (Table 2).

The main meal, here referred to as dinner, offers the most opportunity for change when it comes to overeating. Overall it is where most of the traps, and therefore solutions, can be found to prevent one from consuming more than intended, or needed. There is a mentality brought to dinner that one must clean the plate. This has been instilled in many children from a young age and is known to be an unhealthy practice in most parenting situations [24]. However, even if the mentality is not to clean the plate for the sake of cleaning the plate, most people will clean their plates simply because a clean plate is a good cue to stop eating [23,25]. This means that no matter how much a person takes on their plate to start it is likely that they will eat it all. Because people are likely to clean their plates it would behoove them to serve themselves less to start with. A simple switch to smaller plates to limit how much a person can take in the beginning could help prevent people from overeating [25].

The way in which food is served also encourages people to take more food or less food. In a buffet setting people are more likely to take more of the first few items on a buffet line [24]. The location of the buffet line also influences how much people take and how likely they are to return for second or third helpings of food. The more visible the food is to the consumer the more likely they are to return for more food [32]. The easier food is to obtain the more likely they are to return for more

food [33]. This means that people are more likely to serve themselves second or third helpings if food is easily reachable. To take this another step, if they see the food and have to stand to get it they are more likely to get more than if they cannot see the food, such as if it was left in the kitchen.

Variety of food is also known to increase consumption. When there is more variety of food there is generally a higher rate of consumption [18,23]. This is a leading cause of overconsumption in many of these celebratory situations, many types of foods are made, often times the number of dishes is in the range of ten or more, which leads people to want to try some of everything and therefore get sucked into the trap of eating more than they originally intended to without realizing that the taste of everything was still more than the bigger portion of a few things. There are a few different suggested solutions to the problem of too much variety of food, shown in Table 3, one simple suggestion is to make the healthier options more salient in people's mind by stashing the less healthy options just out of reach or out of sight. We know that just having variety can increase consumption by up to 23 percent (Wansink, 2004). This finding suggests that variety should probably be eliminated in many cases. Even if it's just reducing the number of serving dishes that give the illusion of more variety than there actually is.

Limitations and future research

This study had many limitations. The data collected was all qualitative in manner and was collected by a fairly narrow population. The qualitative observations were of family and friends of students at Cornell University. However, the purpose of the study was to generate underutilized ideas and to explore these topics that typically are not examined in this literature.

From these ideas it is clear that there is a lot of validity in the concept that holidays and celebratory meals lead us to overeat. Beyond just acknowledging there is a problem these insights can lead to improvements and prevention of overeating. For future research there are many insights here that have yet to be explored scientifically. For example the effect that soup has on the rest of the meal would be interesting to examine in holiday settings. As would the effect of having a plan for after the meal, does this help motivate people not to overeat?

Conclusions and implications

The implications of these insights and solutions are a reduction of overeating during the holiday season. With the large impact of weight gain that comes with the winter months there is a significant need to adjust our eating habits [2]. The insiders that provided solutions to these problems have, in many ways, found mindless solutions to the issue of overeating. Simple changes to holiday indulgences would lead a person to eat less without their conscious awareness. These simple changes are broken down into three main categories: distractions and interactions, serving location, and variety and amount.

Know that distractions, such as television or conversation during eating can lead to a decrease in awareness of how much you are eating. Conversations can also be good if they reduce the speed you are eating and reduce the focus from just the food. Where food is placed greatly influences how much you will serve yourself. If food is visible and around you, you are at risk for taking more than you need or necessarily want. Also note that the more food there is and the more variety of food there is the more likely you are to serve yourself more than you need.

Being able to prevent someone from overeating during the holiday season, from Thanksgiving to New Year's Eve, could have drastic impacts on a person's overall health. With an overall reduction in weight gain as well as cardiac strain a person could finish the winter months at the same level of health as they entered. This ultimately could lead to less weight gain overall during adulthood since it is known that the weight gained during Winter months is not lost during the summer months [2].

In addition to these long-term implications of not overeating during the six-week period of holidays there are also the short-term implications. A person's enjoyment of a meal will be greatly heightened if it does not end with feelings of being overfull or disgusted by how much he ate.

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