5 | Social Norms, Beliefs, and Health

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THE EFFECTS OF SOCIAL NORMS—how others act in a given situation—are powerful and have been shown to influence a range of behaviors. Research has found that a host of health behaviors are affected by norms, including exercise behaviors (e.g., John & Norton, 2012), smoking (e.g., Christakis & Fowler, 2008), alcohol and drug usage (e.g., Graham, Marks, & Hansen, 1991), wearing helmets while cycling or skiing, wearing seatbelts, and risky sex (see Sunstein, 1996). Yet most people are largely unaware of the impact these social influences have on their behavior, frequently reporting they have little or no impact, when their actual behavior suggests otherwise (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008).

In this chapter, I focus on the role social norms play in contributing to one of the world's greatest public health problems: obesity. Although high rates of obesity persist in much of the Western world, many developing nations are quickly catching up (Ng et al., 2014; WHO, 2013). Obesity is a multidetermined problem, but an increase in human caloric consumption has been identified as the primary culprit, and social forces may be playing an important role in shaping dietary decisions. The influence of social forces on eating behavior can take many forms: a person can be influenced by the food choices of others, cultural cuisines (e.g., high-calorie, nutrient-poor foods) can spread from one culture to another, what is perceived as a "normal" body weight is shaped by cultural norms and context, and beliefs about what causes obesity are socially transmitted. This chapter begins by providing an overview of social norms research and sources of influence at a broad level. I then narrow the scope to focus on food consumption and weight gain. Throughout, I discuss how social norms

are contributing to society's weight gain, as well as where some of these norms (and beliefs that underlie these norms) may originate.

Social Norms

Norms are, broadly speaking, how others act in a given situation. Research on social norms consistently shows that the behaviors of others in a group strongly influence our own behavior. In perhaps its simplest form this is called "social proof" (sometimes used synonymously with informational social influence, or descriptive norms). This refers to our tendency to look to the behavior of others to determine the appropriate course of judgment or action in a given situation. We interpret the behavior of others as providing information on what should be done in a given situation, and we often act in accordance. Documentation of such effects goes back to at least the 1930s (Sherif, 1936). Because the actions of a majority group shape people's perception of what the "norm" is (e.g., Cialdini & Trost, 1998; Goldstein, Cialdini, & Griskevicius, 2008), our behavior often follows suit. For example, if we are in a group setting and observe that everyone is choosing an obviously wrong answer (Asch, 1956) or littering (Cialdini, 2003), we frequently behave in accordance with the norm that has been established (e.g., also choosing the wrong answer or littering). In social proof, no explicit feedback is needed regarding the social (dis)approval of a given behavior to affect others' behavior—simply the observation of this behavior. The power of social proof underlies a whole host of phenomena, from the wisdom of crowds (i.e., group decisions can often be relied upon to be more accurate than those of individuals; see Surowiecki, 2004) to the usage of laugh tracks (i.e., "canned" background laughter) in television. The purpose of the latter is to increase viewers' enjoyment with the program; if they hear others laughing, it serves as a cue that the viewer should as well, or at the very least it cues that the content is funny to others.

Norms take other forms beyond simply descriptive ones. Cialdini, Reno, and Callgren (1990) lay out two types of norms: descriptive norms (what most others do) and injunctive norms (what most others view as "good" or "bad"). An example of the latter would be a disapproving glare from others for using foul language around children. The descriptive/injunctive distinction is important because invoking different types of norms can have different effects. For many, simply being told that you drink much more than the average person (a descriptive norm) is motivating for cutting back. This social effect has been shown to be particularly strong if the group is somewhat large (versus small, Latane, 1981), similar to us (Goldstein et al., 2008), or one in which we feel close to (or aspire to be like). The more appealing or important a group is to an individual, the more powerful the norms to conform to their behavior can be, a finding with support dating back over 60 years (Festinger, Schachter, & Back, 1950).

Although norms can encourage healthier behaviors, they can also have what is called a boomerang effect. For example, one potential effect of being told you are "below average" (a descriptive norm) on an undesirable behavior (e.g., frequent drinking) could be an increased engagement in that very behavior (e.g., Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007, see also White & Simpson, 2013). Broadly, social norms can shift a person's choices towards the group average, or what is sometimes called the "magnetic middle," which at an individual level can be good or bad. In one example of the boomerang effect, Schultz and colleagues (2007) found that telling people (via a message hung on their doorknobs) they used less energy than their neighbor caused them to subsequently increase their energy usage. This is similar to a related phenomenon, termed *moral licensing*, where feeling that one is doing well in one domain (or acting morally) can cause one to feel "licensed" to make poorer (or immoral) subsequent decisions because of previous virtuous choices (see Khan & Dhar, 2006; Monin & Miller, 2001; Mazar & Zhong, 2010). To then counter the energy usage boomerang effect, Schultz and colleagues (2007) layered an injunctive norm on top of the descriptive one (using a handwritten :) or :(on a subsequent note hung to their door), suggesting (dis)approval for high(low) usage compared to one's peers. The simple addition of a smiley face (an injunctive norm) attenuated the increased usage shown by those who were merely told that they were using less power than their neighbors (a descriptive norm).

Although social norms can be powerful influencers, it is important to remember when designing public health interventions that our behavior does not strongly follow the norms set by those we dislike or with whom we do not aspire to be associated (McFerran, Dahl, Fitzsimons, & Morales, 2010a, 2010b; White & Dahl, 2006, 2007). For instance, when undergraduates were told that a disliked reference group (online gamers) eat junk food frequently, participants' actual junk food consumption declined (Berger & Rand, 2008). In another study (John & Norton, 2013), providing public information about the amount others around them exercised decreased some people's actual exercise behavior, suggestive of the fact that participants were merely looking for an excuse *not* to exercise. Seeing other low exercisers may have licensed them to do just that.

There is also a disconnect that sometimes exists between a person's belief about what is normal or appropriate (the norm) and people's public behavior. An individual's (typically private) attitudes sometimes do not match his or her (generally public) behavior, a state known as pluralistic ignorance. We also tend to assume that social norms are more universal than they are (Prentice & Miller, 1993), and that people's attitudes and beliefs are more homogeneous than is true in reality (e.g., everyone binge drinks, or everyone thinks it is acceptable). One reason why norms have a strong effect is that over time, this disconnect is often resolved by internalizing the norm, and bringing attitudes, norms, and one's own behaviors into consistency. Prentice and Miller (1993) showed this in the context of binge drinking, with the norm exerting an effect on students' drinking behavior—meaning that drinking increased because of a (false) belief that it was normative and desirable to do so. In a related study, Schroeder and Prentice (1998) attempted to combat this effect through messaging. Incoming freshman students were exposed to a video and discussion sessions on alcohol. The discussion either centered on how an individual can make responsible choices (individual-oriented condition) or on pluralistic ignorance and its implications (peer-oriented condition). Four to six months later, students' self-reported drinking was assessed, with those in the peer-oriented condition reporting lower consumption levels, likely because the strength of the drinking norm was reduced in that condition from the treatment.

Social Norms in Food Choice

Although examples of the power of norms are plentiful, they are highly poignant in the domain of food. It has been argued that social influences are a "major, if not the preeminent, influence on eating behavior" (Johnston, 2002, p. 21; see also de Castro, 1994; Goldman, Herman, & Polivy, 1991). There are several sources of social influence in food. First, the presence of others can affect our eating behavior by conveying a norm or making certain norms salient. Second, there are norms set by other peoples' actual choices that affect our own, which are perhaps the strongest norms. Third, the portions offered by those serving us set norms. Fourth, societal norms for different body types can affect our consumption choices. Finally, there are normative beliefs about what causes obesity, which in turn influence behavior. In what follows, I review work in all of these areas.

The Presence of Others

Given we eat most meals in the company of others, research on social norms and eating behavior has centered on understanding how others' presence affects our own food choices. Although the studies presented next examine, largely in experimental settings, how others affect our consumption, there is also evidence that social influences affect food choices and preferences that may precede actual consumption. For example, choices made by parents early on can shape children's food preferences later in life (Birch & Fisher, 1998). Similarly, partners' dietary preferences and requirements almost inevitably affect the other party. If one lives with a vegetarian, the other will likely find himself or herself eating meat less often. Such effects aside, even when the food selection has already been made, social influences play a considerable role in shaping eating behavior.

Social influences can have either a facilitating or attenuating effect on eating behavior, depending on various contextual factors (see Herman, Roth, & Polivy 2003 for a review). Several studies have shown that eating with others (vs. alone) leads to an increase in consumption, called "social facilitation" (e.g., de Castro, 1990, 1994; see also Conger, Conger, Costanzo, Wright, & Matter, 1980; Johnston, 2002; Rosenthal & Marx, 1979). One explanation for this finding is that, with others, the duration of the meal is longer. Not surprisingly, people dine more slowly with others than when eating by themselves, which translates into an increase in consumption. For example, de Castro finds that people eat about 35% more calories if they eat with just one other person, and nearly twice as much in a group of seven or more (de Castro 1990, 1994; de Castro & de Castro, 1989). This facilitation effect is even stronger with friends and family than with other companions. However, there is also research showing the opposite (Herman et al., 2003). In eating, as in other life domains, we aim to project an impression or adhere to social norms (Leary & Kowalski, 1990; Roth, Herman, Polivy, & Pliner, 2001). In many Western cultures, making a good impression might mean eating less, rather than more, when in the company of others. It may be more socially inappropriate to order dessert when no one else does than to pass when others order. This behavior is also often seen among those with eating disorders who frequently binge when they are by themselves and then eat minimally in the company of others (Herman & Polivy, 1980). Further, binge eating itself is influenced by social norms. Crandall (1988) found that among sorority members, an individual's binge eating could be predicted by

that of her peers, an effect that got stronger as the peer groups became more cohesive. He argues that like many other behaviors, the spread of binge eating over time can be linked to social forces.

Food Norms Set by the Choices of Others

A second social force is the norm set by those with whom we are eating. If others eat more, we do as well. If everyone orders an appetizer, we are much more likely to do so ourselves, even if we are not particularly hungry. This has been demonstrated in a large number of experiments known as modeling or mimicry studies. In the general paradigm, a confederate and a single subject participate in a study "together." The confederate's food choice is directly manipulated in a manner that the subject notices, such as by having him or her select food first in full view of the subject. The researchers then assess the subsequent choice of the subject (see Herman et al., 2003). These studies consistently show that the norm set by the confederate has a powerful effect on the participant's food choices, in both directions: When the confederate chose and/or ate a large portion, participants were more likely to choose and/or eat more than they otherwise would if alone, and they ate less if the confederate opted for a smaller portion. Further, the norms set by others are so powerful that the confederate does not even have to be physically present. A few studies (e.g., Roth et al., 2001) have used a "remote confederate paradigm," where it is merely suggested (on a piece of paper visible to participants) what others took in previous sessions, to the same effect. In short, the initial choice of the confederate sets an "anchor," which the participant subsequently uses to inform his or her choice. Further, participants rarely report being aware of this source of social influence.

Groups (rather than individuals) may also set norms, and these norms are probably more powerful than individuals, as social pressure increases with group size to some degree. As the group size increases, no one wants to stand out, and people increasingly conform to the group average (Bell & Pliner, 2003). Accordingly, Wansink (2006) recommends that if you are a light eater, you should eat by yourself, and if you eat heavily, you should seek out a group. I would add that if one is concerned about overeating in the presence of others, ordering before others do in a social setting means you set the norm (or anchor) for others to follow.

One's society or culture is perhaps the broadest type of group influence. As immigrants move to places with higher rates of obesity, they tend to gain weight (Goel, McCarthy, Phillips, & Wee, 2004), suggesting that they are adopting the dietary norms prevalent in their environment, and this effect is stronger among those who have a stronger motivation to fit in. One study (Guendelman, Cheryan, & Monin, 2011) showed that pressure felt by immigrants to fit in led them to report a more "American" (and higher calorie) food as their favorite, as well as to select and consume more of these foods when their identity as an American was threatened. Such a finding is consistent with a social identity (Oyserman, Fryberg, & Yoder, 2007) model of health, as food choice is a signal of one's identity to the self and others (Barthes, 1997). Similarly, underprivileged consumers chose smaller sized snacks when they believed that being fit was a status symbol. However, the effect was reversed when being overweight was perceived as a signal of status (Dubois, Rucker, & Galinsky, 2012). Finally, there are other norms, such as eating all of the food one puts on his or her plate, or buying large portions in bulk, which can vary by regions or households but clearly affect intake (Wansink, 2006; Wansink, Payne, & Chandon, 2007). These norms are powerful and can even supersede human physiology; for instance, people who select larger portions tend to eat more than those given small portions, a fact that holds true even when the food does not taste good or consumers are not hungry (Wansink, 2006).

The Body Type of Others

A third source of social influence in food choice is the body type of the other person (or people) consuming alongside us. The modeling or mimicry studies often do not manipulate this factor, assuming the norm is set by the food choice of the other person, irrespective of his or her body type. However, some research suggests the body type of others exerts its own independent (or interactive) influence. Generally there are two types of studies: ones that examine the effect of another person's body type on our food choices when that person is not eating with us, the other examines the effect of eating with others whose body types and food portion sizes are both manipulated. Campbell and Mohr (2011)'s work is one example of the former. They show that priming people with images of overweight consumers (but not obese ones) has been shown to lead to an increase in quantity consumed. Although using different methods, Christakis and Fowler (2007; but see Cohen-Cole & Fletcher, 2008, for a rebuttal) found that a person's chance of becoming obese significantly increased when a close other (e.g., friend, sibling, spouse) became obese. This suggests that social forces or norms regarding body types might lead to a social contagion of weight gain. In a different paradigm, McFerran et al. (2010b)

sought to answer the question of whether the body type of a server influences diners' food consumption. We also examined the role of recommendations made by this person (i.e., an indulgent choice or something very healthy). To test this, we used an obesity prosthesis so the same confederate played both a normal-weight and an obese individual. All participants were female. We found opposite effects for dieters and nondieters. Although nondieters ate more when the confederate was thin, dieters ate more snacks when the confederate was heavy. A second study examined only dieters and found that when cookies were recommended by the server, participants chose cookies more often when the server was heavy than when she was thin, but when carrots were recommended, they selected cookies with a greater frequency when she was thin than when she was heavy. Instead of shunning the recommendation of the obese server, dieters were *more* persuaded by her recommendation, choosing both the healthy and the unhealthy snack more often when it was recommended to them. Together, these show that people's food choices (and even body masses) may be shaped not only by what others, eat but also by the body type of others who are merely physically present or in our social network (see also McFerran, Dahl, Fitzsimons, & Morales, 2011).

A final set of studies examines others' choices and their body types simultaneously. Johnston (2002) manipulated both the body type of the confederate and her portion size choice and found the typical modeling effect: People ate more as the confederate's portion size increased. However, the effect was somewhat attenuated when the other was obese: People refrained from indulging when seeing an obese person do so. McFerran et al. (2010a) did something similar: We had the confederate (portraying either a thin or heavy patron, again using an obesity prosthesis) first take a food selection (small or large), and then we measured what the participant subsequently took and ate. There was also a control condition where participants were alone. We replicated the modeling finding that after seeing a large portion (i.e., a high anchor) chosen by the other, people adjusted their consumption downward from the high-quantity anchor to a greater degree when the confederate was obese than when she was thin. However, we also found that rather than further decrease consumption when seeing an obese person choose a small portion, participants increased their portion choice, meaning they adjusted upward from a low anchor when the confederate was obese more than when she was thin. In other words, participants consistently followed the anchor that the confederate set more closely when she was thin than when she was heavy. We argued that these results could be explained parsimoniously based on anchoring and adjustment (Wansink, Kent, & Hoch, 1998): People anchor on the quantities others around them select, but these portions are adjusted according to the body type of the other consumer. A final study showed the adjustment from the anchor was more pronounced for consumers low versus high in appearance self-esteem (Heatherton & Polivy, 1991) and is attenuated when cognitive processing resources are constrained. Together, these studies suggest that social norms regarding portion sizes can strongly impact the food we consume, and that body types of others do matter.

Social Norms and Body Types

There are also strong social norms regarding body types, which can be broken down into descriptive (what most people's actual bodies look like) and injunctive (what most people view as acceptable or ideal). It is clear that these two types of norms are frequently in conflict.

In a descriptive sense, it has been widely reported that the average population in almost all Western countries is getting heavier. In fact, in the United States, over two thirds of adults are either overweight or obese (CDC, 2004), literally making being overweight normal or "average" in the statistical sense. Indeed, the normality of being overweight has been noted many places, including a recent *Huffington Post* report entitled "Is Overweight the New Normal Weight?" (Upton, 2011). In the descriptive sense of norms, being overweight or obese is normative, but that does not necessarily mean it is "desirable" or even "socially acceptable." Those terms are injunctive, meaning they place a value judgment on the behavior, labeling it as "good" or "bad" in some way. There is some support for the idea that the perceived normality of obesity has also increased. One study (Dumas, Sciacca, Decolongon, Rodriguez, & Giardina, 2011) has shown that approximately half of mothers with overweight children erroneously perceive their children as being of normal weight. A 2010 Harris Interactive/HealthDay poll with 2,418 US-based adults found that 30% of overweight people think they are actually normal size, 70% of obese people feel they are merely overweight, and 39% of morbidly obese people think they are overweight but not obese (Harris Interactive, 2010). Research on descriptive norms suggests the situation may worsen because such perceptions can exacerbate the problem. As overweight bodies become more common, it is the person of normal weight who appears not to fit in (which could cause him or her to eat more). In turn, those who are overweight are

now, statistically speaking, "normal" and therefore might have a reduced desire to lose weight. Further research on this is needed.

Body type norms can also be shaped by media exposure. There is wide concern that advertising images convey a different and concerning norm: namely, that it is desirable to be very thin. Academics have noted that exposure to thin and "unrealistic" (including digitally altered) images in the media can be detrimental to body image, body-esteem, and both physical and mental health (e.g., Clay, Vignoles, & Dittmar, 2005; Halliwell & Dittmar, 2005; Martin & Kennedy, 1993; Myers & Biocca, 1992; Stice & Shaw 1994; for a review, see Groesz, Levine, & Murnen, 2002). The American Medical Association also recently released a statement emphasizing the importance of advertisers acting responsibly when advertising to youth because digitally altering images (e.g., by slimming the model) can "contribute to unrealistic expectations of appropriate body image" (AMA, 2011, http://www.ama-assn.org/ama/pub/news/news/a11-new-policies.page).

In addition to the (largely descriptive) norms set up by the images themselves, there are explicit statements with divergent messages by producers of fashion images. These statements use injunctive norms to suggest being overweight is either socially unacceptable or acceptable. Statements like "beautiful at any size" suggest that it is acceptable to be overweight. Although there are documented negative effects of overly thin models on their viewers, such models remain the (descriptive) norm. However, some marketers have bucked this trend in recent years. Several firms have launched campaigns that use larger models, arguing that they are more representative of the "average" woman. Perhaps the most well-known example is Dove's "Real Beauty" campaign, in which overweight and obese models were featured with the tagline, "real women with real curves." Similarly, The Body Shop's "Love Your Body" campaign featured the image of an overweight Barbie doll and the tagline, "there are 3 billion women who don't look like supermodels and only 8 who do." Some interpret these campaigns as celebrating the normality of overweight bodies. These ads in effect suggest another (injunctive) norm: Suggesting the models are more "normal," "real," or "authentic" conveys a value judgment about what a normal body looks like (or should look like). Beyond advertising, Debanhams (a large UK department store chain) now features (US) size 14 mannequins in department stores, as does Åhléns, the largest department store chain in Sweden. Several mainstream magazines (e.g., *Elle*, *Vogue*) have featured overweight actresses or models on the cover recently. Other government and nonprofits have undertaken ad campaigns aimed at suggesting all body types are normal and acceptable (e.g., the "No body shame" campaign).

Generally the campaigns, policies, and images that set out to enhance women's body-esteem and protect consumers from exposure to unrealistic images have been widely applauded (Rappaport, 2011; Simmons, 2006). This is presumably because people believe such efforts (a) reduce the stigma and prejudice felt by consumers with larger bodies (Crandall, 1994), (b) discourage consumers from "chasing" a thin body for themselves that they likely can never attain, and/or (c) encourage consumers to be happy with their present body type, even if it is overweight. Interestingly, while public reaction toward normalizing overweight bodies seems to be positive (even though most recognize obesity as a public health concern), most people are abhorred by "thinspiration" (pro-ana [anorexia]) Web sites, often on the grounds that such Web sites normalize or glorify eating disorders (Heffernan, 2008). I should note, however, that such websites, beyond promoting extreme thinness, also promote other harmful eating behaviors that introduce their own health consequences.

Although there is scant research on the effects of "normalizing" obesity, a wealth of research from other domains suggests that the normalizing of a behavior or concept has consequences such as reducing the stigma or negativity associated with it. This can result in its increased pervasiveness. For example, when originally introduced by Louis Réard in 1946, the bikini bathing suit was deemed so inappropriate that the designers had to hire stigmatized individuals (e.g., showgirls) to model it ("The history of the bikini," 2013). Now, of course, the bikini is completely normalized; there is virtually no stigma to adults wearing it. In addition, social commentators and researchers have noted that carrying a large debt load has become more normalized and socially acceptable. This results in consumers justifying poor financial choices, and it may have contributed to the financial crisis (Peñaloza & Barnhart, 2011). One important property of social norms is that they need not be true in any objective sense to have an influence. For instance, people may make poorer financial decisions because they correctly know others do so as well (e.g., data show a consistent rise in US household debt; Federal Reserve Board, 2008) or because they simply feel that others are also taking out massive debt loads (e.g., a few salient friends mention doing so). Both of these social norms would likely increase people's willingness to take on additional debt.

One study (Lin & McFerran, 2014) examines normalizing explicitly and shows that exposure to models with body types that are more

representative of the "average" weight (i.e., overweight) shifts perceptions of how normal and acceptable it is to be overweight. We also show that "normalizing" obesity can lower people's intentions to exercise and eat well, as well as increase their actual unhealthy eating behavior. This suggests that the incidence of obesity should also rise as it becomes more normal and socially acceptable, at least partly because the stigma associated with it dissipates.

The opposite of normalizing is, of course, stigmatizing. There are many strong social stigmas, such as powerful norms against polygamy and incest. While clearly not as stigmatized as incestuous relationships, people who are obese are still subject to considerable stigma and prejudice (e.g., Bacon, Scheltema, & Robinson, 2001; Crandall, 1994; Puhl & Heuer, 2009; Puhl & Latner, 2007). For example, obesity is associated with poorer job prospects and those who are obese earn less money (Organisation for Economic Cooperation and Development [OECD], 2012). Some organizations perpetuate this norm through their messaging. The rationale behind "fat shaming" campaigns is that the stigma may be leveraged to motivate overweight individuals to lose weight. For example, the "Strong4Life" campaign from Children's Healthcare of Atlanta, which featured photos of overweight children and taglines such as "Warning.... It's hard to be a little girl if you're not" (Johnson, 2012). Shaming also manifests itself more subtly: Abercrombie & Fitch does not carry XL and XXL size clothing and the company's CEO, Mike Jeffries, stated that his company's clothing should only be worn by attractive individuals (Lutz, 2013a). Similarly, the former chairperson of Lululemon, Chip Wilson, stated that their pants "don't work on some women's bodies" and the brand has placed larger size clothing items in the back of the store, which could be perceived as stigmatizing overweight customers (Lutz, 2013b). However, research tends to show that fat shaming is unlikely to be an effective strategy for most individuals. It is associated with social isolation and rejection. These feelings may enhance overeating and psychological stress, and decrease the pursuit of other healthy behaviors (Friedman & Puhl, 2012; Puhl & Brownell, 2001, 2003, 2006; Puhl & Heuer, 2010).

It is interesting and relevant to contrast obesity with smoking. In brief, smoking is now a stigmatized behavior in many places (see Bayer, 2008). Some have argued (e.g., Bell, Salmon, Bowers, Bell, & McCullough, 2010) that stigmatizing (or "denormalizing") has been used by public health officials in two ways: attacking the behavior (e.g., campaigns aimed at highlighting the risk of smoking to the self and others, restricting where tobacco can be sold or marketed, and through the banning of smoking in many public places) and attacking the industry (e.g., demonize the tobacco industry, expose industry marketing tactics). At least a few differences between smoking and obesity are notable. First, the food industry is much more fragmented and there are many likely "culprits." Second, smoking (the behavior) and tobacco (the industry) have been actively stigmatized more so than smokers (the people) in messaging. In many ways it is hard to draw a parallel to food here: Obesity is an outcome, while smoking is an activity; people clearly need to eat, but nobody needs to smoke. Third, there now exist many policies (such as clean indoor air laws, advertising bans, and tobacco taxes) that have helped individuals stop the behavior. Currently, there are few policies to support individuals in making healthy eating habits. Unlike smokers, obese consumers are subject to stigma in an environment that does a poor job of helping them change the behavior that is the basis of the stigma. Given that normalizing and stigmatizing obesity may both lead to potentially negative outcomes, at least for some, more research is clearly needed on the best media and public health messaging to promote health. It will be important to gain a greater understanding of how the interaction between society's changing body types and social norms influence health behaviors.

Beliefs About the Underlying Causes of Obesity

Obesity is a complex problem with many causes. These causes can generally be divided into three main sources that each play some role: factors that affect intake (diet), factors that affect energy expenditure (exercise), and genetic factors. However, there is growing scientific consensus that diet plays a more important causal role in obesity than physical activity or genes. The conclusion that overnutrition is the primary cause of obesity is based on many scientific studies across the globe (e.g., Pontzer et al., 2012). The *Journal of the American Medical Association* in a recent editorial concluded, "clearly, environmental causes of obesity are far more influential than genes ... Obesity results from overnutrition and the primary therapeutic target is preventing or reversing overeating.... Exercise is associated with weight loss but its duration or intensity has minor effects on weight loss relative to diet" (Livingston & Zylke, 2012; see also Hays et al., 2002; Jakicic, Marcus, Gallagher, Napolitano, & Lang, 2003; Swinburn, Caterson, Seidell, & James, 2004).

Why are exercise and genes thought to be less crucial than diet? First, it is simply impossible for the human genome to have morphed over

20 years to fully explain the rapid change in obesity rates (Comuzzie & Allison, 1998; Stunkard, Harris, Pedersen, & McClearn, 1990), and people's activity levels have remained stable over decades while obesity rates have increased (Young & Nestle, 2002). Immigrants also gain weight in proportion to the number of years they have been in the United States, suggesting the cause cannot be fully attributed to genes (Goel et al., 2004). Further, from 1980 to 2000 the number of people who self-report that they regularly exercise actually increased from 47% to 57%, and gym memberships in the United States nearly doubled from 1993 to 2009 (Cloud, 2009). Other empirical studies suggest that people are burning as many calories today as in the early 1980s (Westerterp & Speakman, 2008). Of course, regular exercise is beneficial in many ways, but when it comes to weight loss, it does not help to the same degree as dietary changes.

Even if it were possible to substantially increase the duration or intensity of one's exercise, for most people, it would simply be easier to shed those calories through intake rather than expenditure. It is much easier to simply skip the can of soda than to jog for an hour to burn it off. Almost no one has enough waking hours to burn off the 8,000 calories in the Quadruple Bypass burger at Heart Attack Grill restaurants (approximately 9 hours of swimming for someone weighing 150 lb, for example). Further, efforts to increase one's exercise are often accompanied by an increase in caloric intake as well. This can happen because the body is using more energy and thus people feel hungrier, or because people sometimes reward themselves for the exercise efforts with extra caloric intake (e.g., Church et al., 2009). This additional intake can result in a net caloric increase, rather than decrease, from exercise (Sonneville & Gortmaker, 2008). In sum, although exercise rates are relatively stable, Americans now eat at least 200 more calories a day on average than they did in 1980 (e.g., CDC, 2004). Unfortunately, the quality of food may have also declined over this time with an increase in eating away from home at places offering high-calorie food low in nutritional content. In summary, medical consensus shows that diet is a stronger predictor of obesity than either exercise or genetics, but has this knowledge passed down to laypeople? Do regular citizens know this to be the case? Such a question is important because word of mouth and folk wisdom are transmitted through an individual's social circle, shaping the lay beliefs of others, and the beliefs about the causes of obesity have a bearing on eating behaviors and weight gain.

Lay Beliefs

Lay theories are implicit assumptions that ordinary people hold about themselves and their world (Dweck, 1996). People have lay theories (sometimes called "naïve beliefs" or "common-sense" beliefs) about the causes and consequences of various phenomena. These beliefs may or may not dovetail with scientific or empirical facts. For example, some laypeople believe that larger objects fall more quickly or that higher priced products always have higher quality. Information and beliefs diffuse throughout cultures and individuals' smaller social networks get communicated through a variety of channels.

We tested the lay theories people have about the causes of obesity (McFerran & Mukhopadhyay, 2013, see also Brogan & Hevey, 2009; Dryer & Ware, 2014; Harvey, Summerbell, Kirk, & Hills, 2002; Ogden & Flanagan, 2008; Okonkwo & While, 2010), and as with many lay theories, there is considerable variance. We conducted six separate surveys in four different countries to determine the extent to which people indict diet, exercise, and/or genes as causes of obesity.

Across the studies, we used different question formats to assess people's lay theories. For example, sometimes we asked people to choose the primary cause in their minds, from a list of diet, exercise, or genetics. In others, we asked them to allocate 100 points among these factors according to how culpable they believed each to be. We also used a scale item as well as an open-ended measure to ensure that we were not simply suggesting "preferred" alternatives to respondents.

In one study, typical of the set, a nationally representative sample of South Koreans was asked to indicate what they believed to be the *primary* cause of obesity: eating too much, not exercising enough, or genetics. Diet theorists, that is, people who have a lay theory that poor diet is the primary cause of obesity, accounted for 50% of the respondents, exercise theorists for 41%, and gene theorists for 8%. The pattern across the studies suggests that only a little more than half the population holds beliefs in line with the scientific literature. This percentage was, perhaps not surprisingly, much higher among a sample of family physicians.

These results are similar to a 2004 US poll conducted by Harris Interactive. In their sample of 2,275 adults, a large majority (83%) blamed a lack of exercise for the obesity epidemic, while only 34% chose excessive calorie consumption. In sum, although medical research has come to a fairly decisive conclusion about the relative importance of a proper diet,

many people believe (often erroneously) that they can exercise their way to a normal weight.

Why Do These Beliefs Matter?

Are there consequences of a misbelief about the cause of obesity? Other research on lay theories suggests there should be. Lay theories are guides to behavior: If I believe that I am doing poorly in school because I am not trying hard enough, under sufficient motivation I should be likely to try harder, since my belief suggests that this is the appropriate course of action. If, however, I believe I am doing poorly because I lack intelligence, then I view my effort as less consequential, and I am less likely to put in more time. Across several domains (including food), research has shown that lay theories significantly impact judgments and behaviors (Dweck, 1996).

In the domain of obesity, a belief that a lack of exercise is the cause of obesity should result in pursuit of weight loss by increasing the amount of physical exertion one puts forth. A diet belief should result in aiming to lose (or maintain) weight via reducing one's caloric intake. Given research that changing one's diet is likely to be more effective in weight-loss efforts, we expected that people's actual body mass should be predicted by their lay theory (among other factors). In other words, since lay theories should affect caloric intake (we also tested this), and other research shows intake is a strong predictor of body mass, one's mere beliefs about the cause of obesity should predict an individual's body mass. In several studies we found empirical support for the hypothesis that diet theorists should have lower body mass than exercise theorists. This relationship held even after controlling for numerous other variables known to be associated with body mass index. Further, supplementary studies showed that reverse causation was unlikely to contribute to our effect.

These results were also corroborated by at least one polling agency. In 2010, Harris Interactive/HealthDay found in a US-based adult sample of 2,418 people that "Most respondents who felt they were heavier than they should be blamed lack of exercise as the main cause, with 52% of overweight people, 75% of obese people and 75% of morbidly obese people saying they did not exercise enough. Food consumption was seen as the lesser of two culprits, with 36% of overweight respondents, 48% of obese respondents and 27% of morbidly obese feeling that they ate more than they should in general" (Harris Interactive, 2010, http://www.harrisinteractive.com/NewsRoom/HarrisPolls/tabid/447/mid/1508/articleId/558/ctl/ReadCustom%20Default/Default.aspx). Another study showed that stronger beliefs in genes as a cause of obesity was associated with lower exercise levels and lower consumption of fruits and vegetables (Wang & Coups, 2010). Others have shown that beliefs about the cause of obesity can have effects beyond influencing body mass. For example, Monterosso and colleagues (2005) showed that the stigma associated with overeating (and presumably obesity more generally) was attenuated if a genetic cause was given for an individual's obesity.

Where Do the Lay Beliefs Come From?

Lay theories are real, varied, and important, but where do they originate (or perpetuate, or propagate)? A variety of sources play a role, including people's social and cultural environments (Morris, Menon, & Ames, 2001). If your friends and family tell you how to lose weight, we often assume that they are credible sources of information. In addition, popular media and corporate communications play a role in influencing people's lay theories of why people are overweight (and/or how best to combat being overweight). Given the amount of public discussion about obesity, it is likely that most people, overweight or not, have arrived at some personal beliefs about the causes of obesity.

Indeed, a quick Internet search reveals outright contradictory views about obesity from popular media headlines:

"Exercise holds key to keeping weight off" (Colihan, 2008)

"An hour of daily exercise 'needed to stay slim'" ("An hour of . . ." 2010)

"Why exercise won't make you thin" (Cloud, 2009)

"Diet not exercise, plays role in weight loss" (LiveScience, 2009)

"Researchers identify 'fat gene' associated with obesity" (Jiang, 2014)

"Scientists debunk so-called fat gene" (Helm, 2007)

Although people's lay theories about the cause of obesity are likely shaped by many sources, there is a role for public health communications to more accurately shape these beliefs. At a simple level, we know from decades of human judgment and decision making that we place greater emphasis on salient exemplars we encounter. People will say, "She eats whatever she wants and does not gain weight," suggesting that diet may not play as much of a role as genes or exercise. Of course, such a statement makes

wide judgments about the rest of the person's consumption throughout the week, which is almost certainly unobserved. When we see overweight (or thin) people and their parents, siblings, or children who also look similar, we may conclude that genes really matter, even though the similar body masses are likely also due to the fact that such individuals have similar dietary and exercise habits. Finally, we may observe someone who looks very fit and is frequently at the gym and conclude that his or her exercise is the key to keeping the weight off. Again, many fitness professionals do not simply exercise; they eat well, too, but because most eating is unobserved, it is easy to discount its importance.

We argue (Karnani, McFerran, & Mukhopadyay, 2014) that this (mis) information about the causes of obesity is spread and diffused into the public both unintentionally and intentionally. Because weight loss is an important goal, we share (and seek out) advice from others. Well-meaning people tout their (often short-term) success on the latest fad diet or exercise plan. Some of these suggest you can eat anything you want, so long as you follow a set exercise plan. Journalists often report stories and headlines that only loosely resemble the study they are reporting on, or they ignore other relevant papers in making sweeping generalities. Making errors or simplifying the science can play a role in shaping the discourse about the causes of obesity, a discussion that is shared and disseminated socially as we aim to quench our thirst for more information on the topic.

We (Karnani et al., 2014) argue as well for a more malignant source of misinformation about what is responsible for obesity. Specifically, we make the case that food and beverage industry corporations are motivated to deflect the spotlight away from their own products, some of which are the calorie-dense, nutrient-poor offerings that contribute to obesity in the first place. Although every food company in its corporate social responsibility statement proclaims its commitment to be a part of the solution to the obesity epidemic, at the same time, the food companies have a fiduciary responsibility to their shareholders to target growth and increase profits, the majority of which come from unhealthy offerings. This creates a dilemma for the food companies, and the profit motive most often dominates. Indeed, our research suggests corporate messaging is a prominent source of false messages regarding the probable causes of obesity. We contend the food industry's messaging—which emphasizes the importance of exercise in maintaining a healthy weight—is far from unbiased and is inconsistent with the scientific evidence.

Specifically, we argue that communication and promotional activities of the food companies reveal a concerted effort to deflect attention from bad diet and on to exercise (and other factors) as the causes of obesity. We call this effort, overlaid as it is with the theme of social responsibility, "leanwashing." We argue that leanwashing manifests itself in several ways. One is focused messaging and public statements about how exercise rather than diet causes obesity, or at the very least emphasize the importance of "energy balance." A second is to actively sponsor events that encourage exercise (playgrounds, sporting events, and athletes) and promote this as a solution to obesity. A third is to lobby aggressively against any effort on the part of government to reduce or ban the sale of unhealthy food, including by painting such efforts as infringing on personal choice and freedoms. The end result is misinformation about the causes of obesity, and an impaired understanding of what measures might be expected to have the highest efficacy in combatting it.

Conclusions

This chapter underscores the importance of understanding the influence of social norms and beliefs in the context of obesity, and it highlights some of the research that has been conducted in the area. Obesity is serious and costly in many terms. When items such as production losses (e.g., from missed work days) are added to healthcare costs, obesity accounts for over 1% of GDP in the United States, or over $150 billion (OECD, 2012). Beyond economic, there are also social and psychological costs that are considerable. It is unlikely that obesity for most people stems from a lack of motivation. Despite its normality, weight gain still seems to be something most people want to avoid. It is frequently noted as the most common New Year's resolution. The dieting industry is growing, not shrinking, and is now worth over $40 billion annually in the United States alone (Reisner, 2008; Sherrid, 2003). Approximately one third of all women and a quarter of all men are on a diet (Crossen, 2003; Fetto, 2002) in the United States. If obesity frequently does not stem from a lack of motivation, there must be other causes. I suggest that social norms and misinformation are two important contributors to weight gain among a host of other factors. Although correcting false information might be easier than changing social norms, it might not be as efficacious, and indeed some of the misinformation is shared socially as well.

There are a range of ways in which social norms influence eating. Understanding how social norms influence people opens up an opportunity for public health to leverage this information to combat obesity. First,

although we are susceptible to normative influence, implied in that statement is that we also contribute to influence. When we serve a meal for others, we set the tone for the meal. When we choose to serve ourselves first, we set the anchor (or norm) for others to follow. An individual can put himself or herself in situations to not only eat smaller portions but also to influence others to do so as well. This works even better if we use smaller plates (see http://www.smallplatemovement.org). As mentioned earlier, seeking out groups to eat with that you know eat more modest portions might be helpful if you are concerned about overeating. However, by doing so you potentially remove yourself from eating with a different group, for whom you might serve as a positive influence as well.

Some of the norms discussed in this chapter are clearly widespread and cultural. A skeptic might argue that an individual is in little position to make changes that are large enough to affect others (indeed, perhaps not even himself or herself). Although there are clearly many important environmental factors to obesity, research suggests that local norms are more powerful than more global ones. In a seminal paper, Goldstein et al. (2008) show that norms set by a smaller set of individuals (guests staying in this hotel room) set a more powerful norm than those set by larger groups (guests of the hotel). Simply framing the norm more locally resulted in more prosocial behavior (i.e., towel reuse). Similarly, when eating, the norms set by those dining with us (particularly if we are similar to them or we wish to emulate them) are likely to be much more powerful than what "society" eats. The choices we make do matter in the world of those around us.

I also discuss some social norms associated with body weight. The fact that obesity may have reached a tipping point in terms of its normality is a large societal concern. This "normality" is interesting in that most social epidemics (e.g., fads) are popular and desirable when they spread widely. There seems to be little evidence suggesting that the normality of obesity has even led to reduced prejudice against the overweight, let alone widespread desire to gain weight. But what are some of the consequences of normalization, and where does it originate? Clearly more research is needed before these questions can be answered definitively.

Relatedly, what messaging is most useful to support public health? Current messaging takes many forms, as I note earlier. Some messages suggest being overweight is normal (in a descriptive sense) by using overweight models. Others suggest that being overweight is (or is not) acceptable in a more overt, injunctive sense. Research is clearly needed to understand if, when, and to whom each of the messages is effective. For instance, the receiver can interpret a message like "real beauty" in several ways. It could promote body esteem, suggest that many people are obese, suggest it is OK to be overweight, or some combination thereof. Putting faces to bodies has been used in other disease campaigns, usually to reduce the stigma people hold against those who have the disease (e.g., HIV). Here lies a different scenario than HIV, however: There is little someone with HIV can do to reduce his or her HIV. And we would never dream of normalizing HIV if we thought it might increase the incidence rates of actual HIV. Of course, stigmatizing either the obese or those with HIV is likely to be problematic and ineffective for a whole host of reasons noted earlier. It is important to pretest messaging strategies and focus them on target audiences, as some messages that are effective for one group can be ineffective (or even counterproductive) for another.

I highlighted some concerns about normalizing obesity but also some known drawbacks of stigmatizing it. How can this be reconciled? One possibility is that more messaging about obesity is simply problematic in and of itself. In other words, steps taken to normalize or stigmatize may both be detrimental to public health. It could be that drawing attention to any body (large, small, or medium sized) and stating it is some normative standard is likely a poor idea. Ads like the Dove Real Beauty campaign draw attention to body types (even with noble intentions), increasing its psychological salience. We know from research in social psychology that the more attention that is devoted to something, the more of a focus and source of concern it can become (Wegner, Schneider, Carter, & White, 1987), and the more consumers find themselves struggling with self-regulation. It very well may be that efforts to normalize *or* stigmatize bodies are both increasing weight and body shape concerns, which can lead to either over- or undereating (Groesz, Levine, & Murnen, 2002; Polivy & Herman, 2002).

From the perspective of norms, it might be more effective for public health to promote *behaviors* as normative, rather than promote a certain body type. Having generations chase a thin ideal has contributed to eating disorders, psychological challenges, and backfire effects (e.g., binge eating). Suggesting instead that it is normative to eat vegetables and smaller portions might be more effective messaging to reduce unhealthy eating. This merits further examination.

Finally, while I have I have focused on obesity in this chapter, the principles underlying social norms and beliefs likely apply across a range of health behaviors. Public health policies and interventions play a role in shaping what is normative. Using tools that shape social norms should play an important part in reducing obesity and other public health problems

worldwide. However, when designing norm-based interventions, one must be mindful that they can lead to stigmatization and various unintended (and potentially harmful) consequences if not done carefully and evaluated rigorously.

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6 Communicating for Action

THE IMPORTANCE OF MEMORABILITY AND ACTIONABILITY

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FOR MANY PUBLIC HEALTH PROBLEMS, individuals behave in ways that are inconsistent with their beliefs. People smoke, overeat, fail to exercise, and engage in unsafe sex even in cases where they believe the risks outweigh the hedonic benefits. This happens, at least in part, because humans have limited self-control. But another part of the problem is that the human mind has limited memory (Schacter, 2001) and attention (Kahneman, 2011). In light of these well-documented limitations, public health communicators need a toolkit that can work within these constraints to disseminate messages and encourage individuals to engage in healthy behaviors. This chapter describes principles that have proven effective for several different types of communication tools (health guidelines, behavioral prompts, and food labels), but the basic principles apply in many domains and for many other types of health communication as well. The intention of this chapter is to help health communicators develop tools that will lead to behavior change by targeted segments of the consumer population.

Memorable and Actionable Guidelines

One communication tool that directly addresses the limitations of memory and attention is what we have called the memorable and actionable guideline (Ratner & Riis, 2014). Memorable and actionable guidelines are suggestions or recommendations that ordinary people can use in their day-to-day lives. Checklists, although useful in some contexts (Gawande, 2009), are