

Neoliberal Bodies:
Ideology and Obesity

by

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Thesis submitted in partial fulfilment
of the requirements for the degree of
Master of Arts (M.A.) in Sociology

Faculty of Graduate Studies
Laurentian University
Sudbury, Ontario, Canada

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THESIS DEFENCE COMMITTEE/COMITÉ DE SOUTENANCE DE THÈSE
Laurentian Université/Université Laurentienne
Faculty of Graduate Studies/Faculté des études supérieures

Title of Thesis Titre de la thèse	Neoliberal Bodies: Ideology and Obesity		
Name of Candidate Nom du candidat	McFarland, Virginia		
Degree Diplôme	Master of Arts		
Department/Program Département/Programme	Sociology	Date of Defence Date de la soutenance	June 02, 2020

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Abstract

Recent reconsideration of the history of 20th century obesity research suggests that the etiology¹ of obesity has been fundamentally misunderstood or misrepresented (Gard & Wright, 2005; Guthman, 2011; Phinney & Volek, 2011; Taubes, 2002, 2007, 2011, 2016; Teicholz, 2014). The reasons for this are manifold and one is that 20th century obesity research is fraught with bias.

There is a temporal overlap between the establishment of the modern theory of obesity and the entrenchment of neoliberalism in Western countries. I posit that the evidence of the influence of neoliberalism is discernible when considering both how the etiology of obesity has been [mis]understood and how the obese are characterized. Further, I argue that neoliberal policy and governance have contributed to increased levels of obesity. Through discourse analysis (Foucault, 1972) and institutional ethnography (Smith, 2005), I consider the ways in which neoliberalism and the social organization of scientific knowledge have influenced obesity science. I also identify how the resultant conceptualization of obesity that appears in Canadian public health reports reflects neoliberal ideological bias.

Keywords

Neoliberalism, ideology, policy, governance, science, discourse analysis, Foucault, Smith

¹ “Literally, the science of causes, causality; in common usage, cause” (Last, 2001, p. 63).

Acknowledgements

I am eternally grateful to Dr. Reuben Roth for his seemingly interminable patience and his gentle encouragement. Reuben challenged my ways of knowing the world, and I am a more politically engaged and critical person because of it. I truly cannot thank you enough for sticking with me and for helping me to see that this project was within my reach and worth completing. You were a tremendous support, both with the subject and with broader learning. I owe you deep gratitude for guiding me through this process and for sharing your wealth of knowledge and experience with me. Thank you.

Thank you to Drs. Lynne Gouliquer and Moira Ferguson for providing thorough, valuable, and encouraging feedback on the latter drafts of this paper and for participating in my committee. I deeply appreciate your attention to detail and the care you have taken to ensure my thesis paper is the best that it can be. Thank you also to Dr. Jen Rinaldi for participating as an external reviewer.

Thanks to my friends and family for encouraging me to believe that I have what it takes to ‘Get it done.’ In times when I had nearly given up, they had not. The McFarland clan motto is “This I’ll Defend,” and my parents continue to helpfully remind me of that.

Finally, I owe a debt of gratitude to Dr. Derek Wilkinson, who taught me so much in the few years I knew him. Derek made data analysis approachable and fun, gave me my first opportunity to teach statistical analysis to others, and unknowingly taught many lessons in diplomacy and kindness.

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Chapter 1

1 Introduction

1.1 The ‘Obesity Epidemic’

Public health organizations, globally—but particularly in the Western world including most public health regions across Canada—have issued warnings about increases in rates of overweight and obesity, (Ellison et al., 2016; Gard & Wright, 2005; Guthman, 2011; Herndon, 2014). According to the World Health Organization (WHO), the global obesity¹ rate has more than doubled since 1980 (World Health Organization, 2015). The WHO claims that “most of the world’s population live in countries where overweight and obesity kills [sic.] more people than underweight” (2015). Not only is obesity to be warned against, but obesity, according to the WHO, kills.

In Canada, about one in four adult Canadians is considered obese (Statistics Canada, 2019b), and the proportion of the Canadian population considered obese has been rising for decades (Twells et al., 2010). The self-reported² obesity rate in Canada has nearly quintupled since 1985, when the rate was 5.6% (Twells et al., 2010, p. 47). The rate of increase in the proportion of obese people in Canada is also higher than the rate of

¹ Categorization into weight classes for the purposes of discussion in health literature is most often based on body mass index (BMI), which is a measure of a person’s weight in kilograms divided by the square of their height in metres ($BMI = \text{weight in kg} \div (\text{height in m})^2$). As defined using ranges, a BMI of less than 18 is considered to be in the underweight range. The BMI range considered to be normal weight (neither underweight nor overweight) is between 18 and 25. An overweight BMI is between 25 and 30, and an obese BMI is 30 or greater. Both the WHO (World Health Organization, 2015) and Canada (Health Canada, 2015) use this definition of obesity. I discuss the measurement-based definition of obesity in chapter 4.

² Based on self-reported height and weight rather than objectively measured height and weight.

increase in the proportion of people who fall into the overweight category. Since 2003, the self-reported obesity rate in Canada has risen from 15.3% to 26.5%, while the self-reported overweight rate has been almost stable, going from 34.1% to 35.8% (Statistics Canada, 2018, 2019b). In the 13 years between 2003 and 2016, the Canadian rate of overweight and obesity (a combined category reported by Statistics Canada in addition to separate rates of overweight or obesity) rose from 49.4% to 62.3% (Statistics Canada, 2018, 2019b). This means that nearly all of the increase in the rate of overweight including obesity has been in the obese category rather than the overweight category. To rephrase, the proportion of people who are overweight relative to what is considered normal or low weight as measured by BMI has seen nearly all of its growth in the proportion that are considered obese and not merely overweight. A very similar trend is observed in the United States data, where in the early 1980s the obesity rate began to rise sharply from a rate of about 15% to about 35% of the general population aged 20 to 74 (Ogden & Carroll, 2010, p. 3).

Overweight and obesity data are not available for Canada from the 1960s, however the United States have data on overweight and obesity rates from this decade on. In the United States, from 1960–62 to 1975–80, the rate of overweight remained flat at just above 30%, and the rate of obesity rose slightly from about 13% to about 15%. While Canadian rates of overweight have been stable at around 30% from at least the early 2000s, obesity rates in both countries began to increase dramatically from the 1980s to the present day, more than doubling among American adults (Ogden & Carroll, 2010, p. 3) and quintupling from the 1985 rate reported by Twells et al. (2010) by 2017-18.

Observing the sharp increase in obesity rates since the early 1980s, and because obesity is presumed to cause poor health outcomes, public health³ agencies have increased their focus on promotion efforts to reduce obesity. The reasoning provided for this increased focus is that obesity is associated with increased mortality from various causes, or as the WHO puts it, “obesity kills” (2015). The public health strategy to address obesity focuses on nutrition and physical activity promotion. The currently accepted theory of the cause of obesity—i.e., that people take in more calories than they can expend through basal metabolism and physical exertion (World Health Organization, 2015)—may not, however, adequately describe the complex physiological processes that lead to obesity itself. If this is true, the public health strategy of promoting nutrition and physical activity may not be appropriate to address the issue.

The current theory of obesity is thus somewhat problematic. If this explanation of obesity explains the etiology of what the American Medical Association now labels a disease (Pollack, 2003), then observing the double burden of obesity and malnutrition in very poor populations—those in which most of the population is calorie-restricted because of undernutrition—is paradoxical (Gladwell, 1998). Further, this explanation frames obesity as an individual moral failure, because if it is the result of consuming too much energy or expending too little energy, one could presumably simply consume less energy or expend more energy to reduce their weight (and consequently reduce the risks of poor health outcomes that current health discourses purport to be caused by obesity). That, indeed, is

³ “Public health is one of the efforts organized by society to protect, promote, and restore the people’s health. It is the combination of sciences, skills and beliefs that is directed to the maintenance and improvement of the health of all the people through collective or social actions” (Last, 2001, p. 145).

the remedy that the public health sector promotes to achieve healthy weights—reduce calorie intake and increase physical activity—make healthier lifestyle choices. There is tension between the way that obesity is framed in the discourse and the way it is experienced by those who have obesity.

Obesity is treated in largely negative ways in texts and by society in general (Boero, 2007, 2013; Guthman, 2009, 2011). Further, there appears to be a relationship between features of neoliberalism and neoliberal discourse and how obesity was constructed and addressed (Guthman, 2009). Guthman argues that “contemporary US capitalism has helped to create obesity as a material phenomenon and then made it a moral problem that must be resolved in a way that is equally kind to capitalism” (2011, p. 163). Using a blended methodology proposed by Satka and Skehill (2012) that incorporates the discourse analysis methods of Michel Foucault (1972, 1994) and Dorothy Smith (1987, 1990, 1999, 2005), I investigate the relationship between neoliberalism and obesity. More specifically, I examine the obesity narrative expressed in official Canadian public health texts.

In this thesis I posit that the increased obesity rates we see today are a result of the impact that neoliberal ideology has had on the [mis]understanding of the etiology of obesity, coupled with the impacts that neoliberal policy and governance have had on consumption by facilitating the production and marketing of obesity-producing foods to the public. I argue that through historical, colonial policies and modern nutrition policies in North America since the 1970s, through the propagation of capitalist neoliberal ideology, and

through the exercise of power and control, neoliberal fetishes⁴ have distorted the food system and the common perceptions of the nature of obesity.

1.2 Thesis Overview

In this thesis, I discuss the development of the prevalent understanding of obesity and the development of the obesity epidemic as they relate to the rise and hegemony of neoliberal ideology in the global West. I systematically examine how Neoliberal ideology has influenced the scientific understanding of the etiology of obesity, the development of an obesity epidemic, and the responsabilizing narrative of the causes of obesity. The commonly understood etiology of obesity and the responsabilizing narrative of its causes both contribute to the public health understanding of obesity and to the public health recommendations to address it, which are evident in modern federal and provincial public health discourse.

In chapter 2: Literature Review, I discuss the relevant literature, which considers the social construction of science, the development of neoliberal capitalism, and the obesity discourses. The first subsection addresses the social construction of science, exploring the concept of causation and the effects of certain sources of bias on the development of scientific knowledge. The second subsection addresses neoliberal capitalism, presenting a brief overview of its development and its key features, which comprise an ideology, a mode of governance, and a policy package. The final subsection considers literature that explores the narratives present in obesity literature, focusing specifically on the

⁴ Used in this context, “fetish” refers to an object or concept believed to have “power over the desires, actions, health, and self-identity of individuals” (Pietz, 1985, p. 10).

moralizing narrative of obesity, the environmental account of obesity, and the catastrophizing narrative of obesity.

In chapter 3: Methodology, I present the methodology section, which lays the groundwork for my examination of Canadian health texts for neoliberalism's influence on the development of an obesity epidemic and the public health system's understanding of obesity. My ontological starting point is critical realism (Grix, 2010). I also describe my dual standpoint, as both an obese woman and an analyst who routinely, uncritically wrote reports addressing obesity from the perspective of the dominant narrative. My problematic stems from this dual standpoint, which is the perspective from which I recognized the tension in the obesity discourse. In this thesis, I examine whether neoliberal discourses have distorted the food system and the common perceptions of obesity.

The method I use is a blended methodology consisting of two types of discourse analysis, that of Michel Foucault (1972, 1994) and that of Dorothy Smith (1987, 1990, 1999, 2005), applied to complement each other as they offer different ways of seeing the construction of ideas (Satka & Skehill, 2012). I use these methods to uncover the way in which the science and discourse on obesity developed, and to understand how and why they developed in this way. I considered four primary (see Table 1, page 64) and four secondary sources (see Table 2, page 64). The four primary sources reveal the recent obesity discourse as it appeared from the late 1970s through the present day in official government documents, while the four secondary sources describe historical factors in the development of the science and discourse on obesity.

In chapter 4: Findings, I present my findings in five subsections. The first subsection lays out the accepted theory of obesity and the accepted solution to obesity, and describes an alternative hypothesis to the development of obesity (the carbohydrate hypothesis). The second subsection traces the development of the modern scientific understanding of obesity, including factors that may have led the science to focus on a very narrow (and possibly incorrect) theory of obesity. The third subsection briefly describes the development of the modern diet and Canadian dietary guidelines. The fourth subsection describes the influence of the food system on the development of dietary guidelines. Finally, the fifth and final section of the findings discusses current themes in the Canadian discourse on obesity as presented in government documents: obesity as catastrophe, the metabolic theory of obesity, and the lifestyle choices theory of obesity.

In chapter 5: Discussion, I present the implications of the impact of neoliberalism on obesity science and the obesity epidemic, and what it might mean in the broader context of health and wellness. In the first subsection I describe the impact that scientific and ideological bias had on the development of obesity theory and the ways in which researchers who challenged the established science were marginalized. In the second subsection, I discuss the changes to the dietary guidelines and their impact. In the last subsection, I discuss how neoliberalism contributed to framing obesity.

Finally, in chapter 6: Conclusion, I summarize the findings and provide recommendations as to an alternative way forward.

Chapter 2

2 Literature Review

The literature review lays out the foundational knowledge required to understand the development of the obesity epidemic (both as a rise in rates of higher body weights and as a moral panic). In order to better understand obesity theory, it is crucial to appreciate how the science and knowledge base developed in relation to the developing political ideology of neoliberalism—which was itself becoming entrenched in North American culture. The topics addressed include the social construction of science, the development and key features of neoliberal capitalism that relate to obesity discourse, the development of the obesity epidemic, and the responsabilizing narrative of obesity.

2.1 The Social Construction of Science

Science is fraught with difficulties because it is socially constructed and constituted by the actions of the human actors who perform it—it is constituted by the agreement of these same humans on the body of knowledge (Kuhn, 1996; Latour, 2010). Katz, Fishman and Fritz (1980, p. 32) argue that science “is always grounded in political and economic realities and is used by one class against another.” Considering modern science as a social construction can help “to appreciate it as a social problem” (Restivo, 1994, p. 79), and may help us to better understand how some bodies of scientific knowledge came into being and how the bias of those in power contribute to their formation.

Current understanding is built upon this accumulated knowledge, the developmental context of which is not understood and which includes and accepts as valid previous knowledge which ought to have been revised given new findings. Foucault claims that

scientific discourse fails to properly account for its context and fails to reject the aspects of the knowledge base that no longer fit a hypothesis (1972, p. 184). Smith suggests that “[T]he past shapes the direction and framework of the future; what we build interlocks with what others build; we build what we know how to build with the materials that come to hand” (1990, p. 53). These claims suggest that knowledge creates a confusing mass of useful, supported hypotheses littered with unsupported hypotheses and missing critical contextual information. Science discourse accumulates over time and this accumulated knowledge does not always properly explain how it came to be. Further, it retains previous knowledge beyond the point at which it is demonstrated it no longer fits a hypothesis.

Health and life science researchers have contributed to “constructing and resolving the obesity epidemic” because of the nature of how science is conducted: scientists do not challenge hegemonic hypotheses and they must work hard to compete for resources and status (King-White et al., 2013, p. 80). Thus, science is fallible, because people are susceptible to bias, to faulty reasoning, and to the power relations of the society in which they exist.

Attributing Causation

Much of obesity knowledge is based on epidemiological observational studies, since it is difficult to conduct randomized, controlled experiments in this area. Observational studies are at a marked disadvantage when compared to randomised, controlled studies because although they are “capable of demonstrating associations and supporting inferences, [they] do not generally justify statements about causation” (Cofield et al., 2010, p. 353). Despite this, a review of 525 peer-reviewed observational studies of obesity published in

2006 found that nearly one third of them used causal language in their titles and/or abstracts, and those that reported nonsignificant associations were nearly twice as likely to use causal language as those that reported significant associations (Cofield et al., 2010). In sum, the attribution of causation is common in the observational literature on obesity but by its nature observational evidence cannot support causal attribution.

Thus far, obesity has not been identified as causal to the development of chronic illnesses (Guthman, 2011; Ross, 2005), because the associations of obesity with other health conditions like those of the metabolic syndrome identified by Reaven (1988) are only correlation. In order to establish causality, rather stringent criteria must be met (Ross, 2005). The commonly used set of standards to infer causality in medical research known as the Bradford Hill criteria⁵, when applied to question of obesity's causal relationship to either heart disease or to non-insulin dependent diabetes, does not justify causality (Ross, 2005). Nevertheless, obesity is often cited as a risk factor for many of the chronic health diseases associated with the metabolic syndrome (Taubes, 2007).

Relying on observation is itself problematic. Kyburg describes three criteria to consider when judging the value of observation. First, “[O]ur preference is based on our knowledge” (2011, p. 82). This is to say that we will observe things based on our existing knowledge. Second, observational judgments that can be made reliably might not have any relationship to the outcome to which they are supposed to be related (Kyburg's

⁵ Austin Bradford Hill (1897–1991) was a British medical statistician who set out a series of criteria of a causal association between a factor and a disease, which are: consistency across studies, strength of relationship, specificity of cause and effect, dose-response relationship, temporality [exposure precedes outcome]—this is the only critical criterion, biological plausibility, coherence [compatible with existing knowledge, and experiment [the outcome can be altered through experiment]]. (Last, 2001)

examples are palmistry and phrenology). Finally, there is the possibility that what was observed could not have possibly been observed at all. In summary, observational research is arguably faulty.

Once you have established with some confidence that you are observing valid data, inferring causation from those data presents its own difficulties. One of these difficulties is the complexity of physiology, which studies the relationships between isolated parts and attempts to synthesize theories from complex systems (Canguilhem, 2008). The impacts of causal inference and ignoring systems complexity in nutrition research are considered in chapter 4, as both have contributed to the development of the commonly accepted theory of obesity.

Bias

Sex and Race Bias

One of the biases in 20th century obesity (and, more broadly, physiology) research has been the white maleness of the research, whether considering its research subjects (selection bias and exclusion bias) or the researchers themselves (potentially leading to observer bias or detection bias). This is especially problematic since both race and sex seem to contribute to varying patterns of obesity, and there are certainly demonstrable differences in physiological processes based on these variables. The race and sex biases in the body of obesity and physiology research from the 20th century pose problems for understanding obesity and addressing it appropriately.

Rates of obesity and patterns of fat distribution differ between sexes and among races (Guthman, 2011), but it doesn't end there. Niewenhoven and Klinge highlight that racial

and sex differences in physiology go beyond levels of fatness (2010). One example that should be recognizable to everyone is that boys and girls have different physiological responses to puberty—while boys become more muscular, girls begin to develop fat deposits (Taubes, 2007).

While sex and race can affect the genesis of certain physiological conditions based on biology and behaviours, race and sex can also interact with therapeutic interventions in potentially harmful ways. In Canada, men are twice as likely as women to suffer a heart attack (Statistics Canada, 2017). Nevertheless, the dietary recommendations of the American Heart Association to reduce cholesterol “could actually exacerbate the risk of heart disease for women” (Dresser, 1992, p. 27). In America, non-Hispanic blacks are at greater risk for cardiovascular disease than whites (Gillespie et al., 2013). Race can also impact how medications are metabolized. “African-Americans given the ‘normal’ dose of lithium (established in trials in white men) frequently experienced toxic reactions, heightening their already high risk of renal failure” (Dresser, 1992, p. 26). Generalizing research findings based on biologically unrepresentative samples can be dangerous and lead to recommendations that have the potential to cause harm. It would seem crucial, then, for research on biology and physiology that aims to generalize to the broader population to incorporate research subjects who represent the diversity of biology and physiology present in the broader population.

As noted, sex and race biases in the life sciences exist on at least two levels in the West: white men are more likely to conduct the research (Spanier, 1991), and white men have historically been more likely to be included in samples in research on biology and physiology (Dresser, 1992). These two facets of bias may have inadvertently contributed

to a flawed understanding of the role that differing biology has on the development of obesity.

A great deal of Western scientific knowledge originated with white men arguably as a result of the history of white male privilege in the global West (Hogan, 2001). Hogan claims that universities reproduce traditional gender inequality, with universities commonly hiring faculty wives to intermediary administrative positions wherein they are more commonly tasked with ‘minding the children’—supervising laboratory activities or catering to student needs. “Colleges, even as late as 1960, were communities of a kind but they were gender-segregated, class-specific, gentlemanly spaces, culturally very white and English” (Johnson, 2010, p. 77).

This white male dominance of post-secondary education in North America persists. Sheltzer and Smith found that although more than half of doctoral recipients in the life sciences in the United States are women, they are underrepresented at the faculty level (2014). They postulate that this is a direct result of a bias of male faculty members to employ proportionally fewer female graduate students and postdoctoral researchers (Sheltzer & Smith, 2014). The most elite of the male faculty—those who received prestigious grants for their research, those elected to the American National Academy of Sciences, and those who had won a major career award—were even less likely than the standard male faculty to employ women (Sheltzer & Smith, 2014). By contrast, female faculty—even elite female faculty—exhibited no gender bias in employment patterns (Sheltzer & Smith, 2014).

In their survey of biology laboratories for their research, Sheltzer and Smith identified that about one quarter of faculty were women (2014). If the male faculty are systematically biased against hiring a proportionate balance of female employees as compared to the female faculty, they are effectively disadvantaging women aspiring to faculty appointments, so that it is most commonly men who lead research projects. Race also factors into both the proportion of faculty doing research and the available research funding. White men are at an advantage in obtaining faculty appointments and obtaining funding for their research. During the time period in which much of Western obesity and nutrition knowledge was being developed, nearly all the researchers were white men (Taubes, 2007).

From about the 1930s to the 1970s, when formative nutrition research was being conducted in the United States (Taubes, 2007; Teicholz, 2014), there were very few black faculty at American universities—by the early 1980s, the figure was less than 3 percent (Elmore & Blackburn, 1983)—and that was growth relative to the preceding decades. Virtually all the influential nutrition and obesity researchers whose work I will discuss in the findings are white, and most of them are men.

Securing research funding is critical to conducting research. In the United States, Ginther et al. (2011) found that a disproportionately low percentage of black researchers who applied to the National Institutes of Health were awarded research grants. Asian and Hispanic applicants were also at a disadvantage, but the disadvantage among black applicants was stark—they were slightly over half as likely as white applicants to receive funding. Further, if you were a black applicant who had also been trained by black researchers, your chances of receiving grant funding were even lower. Racial bias in

research funding may prevent those who would consider race in their analyses, perhaps because of lived experience, from being materially empowered to carry out their research.

Beyond the impact of *who* conducts research, sex and race have historically impacted sample selection, particularly in the life sciences. The representative research subject in the life sciences is a white male—other racial and ethnic groups are typically excluded, as are, frequently, children and the elderly (Dresser, 1992). Thus, the exclusion from participation in research as subjects is an indication of sex and race bias (selection bias and exclusion bias) in research and hence in our knowledge.

Research often leads to recommendations. For example, “An NIH-sponsored study showing that heart attacks were reduced when subjects took one aspirin every other day was conducted on men, and the relationship between low cholesterol diets and cardiovascular disease has been almost exclusively studied in men” (Dresser, 1992, p. 24). This initial study considered only male participants and while it spurred a number of trials that included women as subjects they were still a minority of participants (Nieuwenhoven & Klinge, 2010). These studies led the American Heart Association to recommend aspirin therapy to all high-risk adults, despite not including a truly representative sample of women. As in this case, some life science research leads to recommendations that go beyond findings observed in the study population.

The overgeneralization of research findings to policy recommendations can lead to potentially adverse results:

Recent sex-specific meta-analyses ... showed that aspirin therapy reduces the risk of a myocardial infarction in men only, whereas the risk of an ischemic stroke is lowered only in women. The recommendation should, therefore, only have been

applied to men and in fact was harmful to women because the use of aspirin increases the risk of bleeding events. (Nieuwenhoven & Klinge, 2010)

Nieuwenhoven and Klinge (2010) found that when assessed for gender sensitivity, only about one in five researchers who believed their research was gender-sensitive had conducted research that met gender sensitivity criteria. “The role of sex and gender is, often mandatorily, considered but poorly understood and ‘very weakly addressed’” (2010, p. 313). Arguably, sex and race bias in biomedical and health research is a problem and often goes unrecognized.

It is worth noting that, in Canada, women couldn’t vote in federal elections until 1918, and even then Asian women (and men) couldn’t vote until after WWII and Aboriginal women (and men) couldn’t vote until the 1960s (Strong-Boag, 2016). As with liberalism, upon which the ideological fundamentals of neoliberalism are based, not all persons are accorded rights (to property, to representation). By extension, women and people of colour in Canada were not included in research, and this stems from their societal valuation—societal bias. Sex and gender “deserve further consideration until proven otherwise” (Nieuwenhoven & Klinge, 2010, p. 318), since “looking for sex differences might give clues to the responsible mechanisms of action, especially when they are much more prevalent in one of the sexes” (Guthman, 2011, p. 15), as is the case of obesity and overweight.

A similar argument can be made for considering race when studying biological phenomena. Differences in physiology based on race, sex, gender and even age that can impact health outcomes should be considered when designing research. To summarise

this section, the bias in researchers and the research subjects indicate a gender, sex and race bias that has possibly skewed knowledge.

Scientific Hegemonies

The scientific method attempts to eliminate or at minimum mitigate bias in order to produce unbiased knowledge, and proper science should be open to criticism and questioning. As Yudkin says, “The safest position is somewhere between arrogance based on unrecognized ignorance, and arrogance based on unwarranted certainty”(1972, p. 8). Unfortunately, hegemonic ideologies arguably have a negative impact on science.

In, *Biology as Ideology*, Richard Lewontin contends that research assumptions can and do bias science, and that science is not separate from ideology, in that:

[I]t is a human productive activity that takes time and money, and so is guided by and directed by those forces in the world that have control over money and time. Science uses commodities and is part of the process of commodity production. Science uses money. People earn their living by science, and as a consequence the dominant social and economic forces in society determine to a large extent what science does and how it does it. More than that, those forces have the power to appropriate from science ideas that are particularly suited to the maintenance and continued prosperity of the social structures of which they are a part. So other social institutions have an input into science both in what is done and how it is thought about, and they take from science concepts and ideas that then support their institutions and make them seem legitimate and natural. It is this dual process—on the one hand, of the social influence and control of what scientists do and say to further support the institutions of society—that is meant when we speak of science as ideology. (1991, p. 4)

Gard and Wright point out that “there is no reason to think that scientists are any less influenced by ideas circulating in the wider culture than anyone else” (2005, p. 17). Thus, it appears that the impact that the social, political, and ideological environments have on science means that it is fraught with more bias, and has less scientific rigour, than is generally believed.

The ways in which nutrition studies in particular are designed are frequently impacted by the selection bias of the researchers undertaking the work, or by the groups funding the work (Lustig, 2017; Taubes, 2007, 2011, 2016; Teicholz, 2014).

A large number of psychological studies have shown that people respond to scientific or technical evidence in ways that justify their pre-existing beliefs. 'Selection bias,' as it's called, is the danger of becoming overly attached to one's own hypothesis or belief system. (Teicholz, 2014, p. 56)

The impact of this bias on the research design is that frequently the study design misses accounting for (or even identifying) potentially confounding variables. Context matters to a great extent in science, as confounding variables or covariates may mask effects or create effects that exist only in a very particular set of circumstances. It seems fair to conclude that some research produces biased scientific knowledge.

It is also important to consider what happens to that knowledge after it is produced—who takes it up and who uses it. Knowledge created in this way is usually passed on to students. Both Teicholz (2014) and Taubes (2016) found that students learning about nutrition are frequently exposed to the theories without exposure to the context or the history of the development of these same theories. Taubes argues that without knowing the history of the idea students will not question it (2016). The autoethnographic work of Rochefort et al. (2016) supports this at least in their own experiences as Canadian dietetic students. This uncontextualized way of teaching supports Foucault's claim that science formation fails to properly account for its context (1972) and as Taubes suggests, students accept it uncritically (2016).

Julie Guthman (2011) cites the issue of problem closure as central to the predicament of obesity research and policy recommendations. "Problem closure occurs when a specific

definition of a problem is used to frame subsequent study of the problem's causes and consequences and thus precludes alternative conceptualizations of the problem" (Guthman, 2011, p. 16). Maarten Hajer, who coined the term 'problem closure', describes it as a consequence in policy-making of "defining a set of socially acceptable solutions for well-defined problems" (2003, p. 22). Hajer argues that since policy problems are constructed of "a historically-constituted set of claims" (22), many disparate claims can accumulate and "'somehow' become related to one another and result in a particular definition of the policy problem" (22). He calls this "the 'discursive closure' of the policy problem" (22). The result is that the conceptualization of the problem becomes one that is policy-friendly and possibly oversimplified. Guthman writes:

In the case of obesity, problem closure appears evident in the focus on getting people to eat more fresh fruits and vegetables, whether through health education, snack taxes, or changes to federally funded school meal programs. This is not to disparage fresh fruits and vegetables; it is to note that the solution in some sense wags the dog of the problem statement, for it assumes that obesity is caused by a lack of fruit and vegetable consumption. (Guthman, 2011, p. 16)

It may be that problem closure contributes to not questioning the research such that it extends to not fully presenting the research foundations to students. Or perhaps this habit of teaching a theory without the foundational research comes from a desire to simplify a concept. "A simple and dramatic theory that explains everything makes good press, good radio, good TV, and best-selling books. Anyone with academic authority, a halfway decent writing style, and a simple and powerful idea has easy entry to the public consciousness" (Lewontin, 1991, p. vii). Unfortunately, this kind of simplification may obfuscate important details about the foundational knowledge behind what is being taught.

In 1980, Katz Fishman and Fritz wrote:

At a time when many capitalists have decided that it has become economically necessary to erode the benefits of the welfare state, how convenient is it for legislators to have a ‘scientific’ rationale for such reductions in human and social services.

At the time, Katz Fishman and Fritz (1980) were critiquing the uncritical and ready acceptance of E.O. Wilson’s sociobiology because of an apparent ideological alignment of the theory of sociobiology with neoliberalism. Certain ideas fit well within—and may gain widespread support under—certain ideological frameworks.

In summary, it is important to note that research, even the scientific method, can produce biased research findings and contribute to incomplete and biased knowledge which can lead to a scientific rationalization that exists to absolve those governing of their responsibility for negative societal outcomes. The ideological framework of neoliberal capitalism, which will be explored next, may have contributed to setting the stage for the dominant obesity paradigm, as well as increasing obesity rates.

2.2 Neoliberal Capitalism

Neoliberalism, or neoliberal capitalism, is the current economic system in the global West and across vast areas of the world. What follows is a brief history of Western neoliberal capitalism, beginning with mercantile capitalism, the ideology of liberalism and the capitalist economic system in the 1500s. This is intended to demonstrate the focus on profit and the legitimizing nature of the capitalist discourse for those in power (those with capital). The needs of those outside of the ruling classes are subjugated to those of the ruling classes, and social actions (including science) are not undertaken *for them*, but for those in power.

Mercantile Capitalism

Modern capitalism can be traced directly from the departure from feudalism to mercantilism, trade expansion and its corresponding bourgeoisie finance to large-scale industrialization and globalisation (Beaud, 2004). All of these developments took place in the global West beginning in the early sixteenth century, following the discovery of the Americas (Beaud, 2004). At the time that capitalism first began to emerge, economic organization in Europe consisted of a labouring peasant class, which was engaged in subsistence production and from which those in upper classes—the clergy, nobility and royalty—profited through the extraction of rent, since land was not owned by the peasantry (Beaud, 2004). Little agricultural production was exchanged through the market, which “mainly involved craft production, which took place within the framework arranged by the guilds” (Beaud, 2004, p. 20).

An influx of capital that followed the pillage of precious metals from the Americas allowed the financiers and merchants (new bourgeoisie) involved in that pillage the means to set up the vast trade networks that sparked sixteenth century mercantile capitalism—the “embryo of the development that later on could be called capitalism” (Beaud, 2004, p. 22). This new bourgeois class that was enriching itself through mercantile capitalism also started to espouse a new ideology: that of liberalism, which appeared in the seventeenth century.

Liberalism

Liberalism arose with the European Reformation and was born of the common desire for rights and freedoms—freedom of speech, freedom of religion, a universal right to life and rights to property (Ishay, 2008). “[T]hese were the aspirations of the middle and well-off

peasants, the dealers, the artisans, and the men important locally” (Beaud, 2004, p. 30).

While the poorer classes—artisans and workers—wanted regulation to ensure them wages and labour protections, it was “the banking and trading bourgeoisies, the jurists and the men of the law, the liberal professions, the important men in the rural areas, the merchants and wealthy farmers, as well as ... part of the gentry” (Beaud, 2004, p. 31) who demanded democracy and liberty.

Ishay describes early liberalism as exclusionary, as these rights and freedoms were only accorded to predominantly white, heteronormative male citizens (2008).

For [John] Locke, free men, those who enter into the social contract, are the members of the nobility, the clergy, the gentry, the commercial and financial bourgeoisie, and particularly the enlightened landowners, the bourgeois who have shown the ability to manage their own affairs. (Beaud, 2004, p. 34)

With liberalism, those who were not part of the ruling classes were not accorded rights and freedoms. To a great extent, the modern version of liberalism remains exclusionary—the conception of a citizen to whom rights apply is broader, but restrictions are still there for those within and outside of the group who are not deemed worthy of full rights and privileges. With liberalism, there was the presumption of equal opportunity *for certain people*, and this preoccupation with stratified social class(es) carries through neoliberalism and into the bias in obesity science.

Neoliberalism (Neoliberal Capitalism)

The liberal preoccupations with property rights and financial success (as a marker of a responsible citizen) also carried into neoliberalism—the 20th century revival of Classical Liberalism. In the aftermath of the Great Depression and the American New Deal, economist Friedrich von Hayek twice organized groups of like-minded academics to steer

the world away from New Deal economic policies. They felt that “government planning led to totalitarian dictatorship” (Morris Innset, 2016). This was a reaction against the rise of Soviet communism and its influence; “Ludwig von Mises and Friedrich Hayek. ... [both] saw social democracy, exemplified by Franklin Roosevelt’s New Deal and the gradual development of Britain’s welfare state, as manifestations of collectivism that occupied the same spectrum as Nazism and communism” (Monbiot, 2016). An initial organization followed a gathering in Paris in 1938, but was disbanded following eruption of WWII (Morris Innset, 2016). It was at this initial meeting that the group voted to name their doctrine *neoliberalism* (Morris Innset, 2016), a term that had been coined in the 1920s by Max Adler, but carried a different meaning than it had when it was later adopted by this group (Bellamy Foster, 2019b). When Adler, a Marxist, coined this term, it was “to designate Mises’s attempt to refurbish a fading liberal order through a new ideology of market fetishism” (Bellamy Foster, 2019a). It was used in criticism of Mises.

The second coming of the group that would originate what we call neoliberalism would be known as The Mont Pelerin Society, so named for its inaugural meeting at the resort of Mont Pèlerin, in Switzerland. According to the Society’s modern website, “they see danger in the expansion of government, not least in state welfare, in the power of trade unions and business monopoly, and in the continuing threat and reality of inflation” (The Mont Pelerin Society, n.d.).

Over time, neoliberalism gained a foothold as Western economic growth began to slow and then stagnate in the 1970s. Encouraged by a few people in key positions of power, including Paul Volcker, Henry Kissinger, and a group of economists known as ‘the Chicago boys’ who were influenced by University of Chicago economist Milton

Friedman, governments began to enact neoliberal policies throughout the late 1970s and into the 1980s (Harvey, 2005). Social welfare programs and government regulations alike were retrenched in favour of lower government spending and lower taxation (Harvey, 2005). The general climate shifted away from collectivism and toward individualism (Harvey, 2005).

Key Features of Neoliberalism

Neoliberalism “proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within in an institutional framework characterized by strong private property rights, free markets and free trade” (Guthman 2011, 17; Harvey 2005, 2). According to Steger and Roy, there are three “intertwined manifestations” of neoliberalism: an ideology, a mode of governance, and a policy package (2010, p. 11). I will briefly touch upon each of these three characteristics, which I will demonstrate have been central to the way that obesity discourse, obesity science, and obesity rates have developed in the latter half of the 20th century.

Ideology

For any way of thought to become dominant, a conceptual apparatus has to be advanced that appeals to our intuitions and instincts, to our values and our desires, as well as to the possibilities inherent in the social world we inhabit. If successful, this conceptual apparatus becomes so embedded in common sense as to be taken for granted and not open to question. (Harvey, 2005, p. 5)

Neoliberal ideology is difficult to objectively characterise, as it has become normed over the last forty or fifty years—as George Monbiot notes, “So pervasive has neoliberalism become that we seldom even recognise it as an ideology” (2016). At its core, however, “Neoliberalism sees competition as the defining characteristic of human relations” (Monbiot, 2016), and it can be best understood as a fictional narrative of equality of

opportunity, justifying the successes and failures of societal members. Key concepts in neoliberal ideology based on this underlying fiction of equal opportunity include individualism, and freedom of choice.

“[A] belief in free choice is a recurring pattern among liberals, applied to innumerable situations such as voting, shopping, or choosing a partner” (Freeden, 2003, p. 21). Related to this idea is that if all people have the freedom to choose among similar options, then all people have an equal opportunity to succeed or fail, and this success or failure is based directly on choice. “According to rational choice theory, people weigh the costs and benefits of each alternative and pick the one they prefer” (Gigerenzer, 2007, p. 31). Choice, then, becomes an important overarching theme in the discourse of neoliberal times.

The freedom of choice and equal opportunity narrative naturally leads to the designation of deservingness among societal members. If a person is free to choose and has the same opportunity that any other person in society has, then the success of a person is the result of that person’s choices. In a neoliberal climate,

While personal and individual freedom in the marketplace is guaranteed, each individual is held responsible and accountable for his or her own actions and well-being. This principle extends into the realms of welfare, education, health care, and even pensions ... Individual success or failures are interpreted in terms of entrepreneurial virtues or personal failings (such as not investing enough in one’s own human capital through education) rather than being attributed to any systemic property (such as the class exclusions usually attributed to capitalism). (Harvey, 2005, pp. 65–66)

Thus, under neoliberalism the individual is at fault and not the system. The social-democratic, Keynesian paradigm adopted in the second quarter of the 20th century recognized unequal opportunities and thus emphasized rebalancing toward equality of

outcome, particularly financial outcome (Tsatsanis, 2009). Neoliberalism is fundamentally different as it is about individualism and equality of opportunity (Tsatsanis, 2009).

Governance

One of the primary features of neoliberalism is its goal of deregulation and “an absence of government interference” (Stanford, 2008, p. 48). Stanford argues that the notion that the government doesn’t—or does, but minimally—interfere with the lives of citizens is false: “[I]n fact, there are still many ways in which government and the state continue to wield real economic power under neoliberal capitalism What has changed is *how*, and in *whose* interests, that power is now exercised” (2008, p. 48). According to Bellamy Foster (2019a):

Neoliberalism has always been strictly opposed to strict *laissez faire* since it has invariably emphasized a strong, interventionist and constructionist relation to the state, in direct service of private capital and market authoritarianism The role of the state is not simply to protect property, as maintained by [Adam] Smith, but, as Foucault brilliantly explained in his *Birth of Biopolitics*, extends to the active construction of the domination of the market over all aspects of life. This means refashioning the state and society on the model of the corporation or the market.”

The neoliberal model developed out of a tradition of monarchies in the West, where power was concentrated in the hands of a wealthy elite who ruled independently of citizen participation. Power under neoliberalism is still concentrated in the hands of the wealthy, but the wealthy classes have transitioned from the royals and nobles who controlled the trade to the company merchants (and their descendants) who engaged in or currently engage in trade. This is underpinned by Gilens and Page’s (2014) argument that the US should be considered an oligarchy due to the concentration of power in the hands of the

economic elites and interest groups instead of the average citizens and grass-roots movements.

While Canada is not the United States, according to Stephen McBride, “After the election of the Mulroney government in 1984, Canada pursued a policy of loyal and uncritical alliance with the Americans” (2001, p. 48) This accelerated Canada’s integration with the United States’ economy (ibid.). Canada has a substantial agricultural and food trade relationship with the United States, with imports and exports of approximately one billion dollars (each way) per month (Statistics Canada, 2019a). If the United States is an oligarchy, and policies that are enacted there are better aligned to the interests of economic elites than to those of average citizens, it would stand to reason that if we adopt policies similar to theirs then our policies are also likely to be in the interests of an economic elite rather than in the interests of average citizens.

Policy

A country’s laws and regulations are its policy package, and these apply to most aspects of everyday life within that country (Steger & Roy, 2010). Trade policy controls the products available for consumption, including foodstuffs. Social policy outlines how taxation is proportionally allocated based on various criteria, including who receives benefits and services. Enforcement policy lays out what consequences will be administered for violating a set of laws (also policies) including to whom those laws apply.

The paradox of neoliberalism is that it contradicts its stated ideology in its policy packages, which aim to protect capital and capital accumulation. This is because of the

impact of private capital and markets on governance. An often-claimed feature of neoliberalism is that it is “defined by abolition of state regulation of economic activity” (King-White et al., 2013, p. 84). However, it could be argued that neoliberal policy is defined by the introduction of the economic regulation of state activity. Governments “lavishly subsidize corporations and work to advance corporate interests on numerous fronts” (McChesney, 1999, p. 13), while claiming an absence of interference.

The same corporations that exult in neoliberal ideology are in fact hypocritical: they want and expect governments to funnel tax dollars to them, and to protect their markets for them from competition, but they want to assure that governments will not tax them or work supportively on behalf of non-business interests, especially on behalf of the poor and working class. (McChesney, 1999, p. 13)

Neoliberalism allows the economic elite to dictate state policy partly because of a focus on indicators tied specifically to economic outputs, most notably the Gross Domestic Product⁶ (GDP), which, according to Costanza et al., became appropriated as measure of human wellness after the Bretton Woods Conference (2014).

Following WWII, “leaders of the 44 allied nations gathered in Bretton Woods, New Hampshire, to create a process for international cooperation on trade and currency exchange” (Costanza et al., 2014). As economic growth was expected to be a main positive contributor to human wellness, “GDP came to be used by the IMF and the World Bank as the primary measure of economic progress in the ensuing 60 years” (Costanza et al., 2014). Currently, economic growth is seen to represent overall progress, which in actuality it does not (Costanza et al., 2014).

⁶ GDP adds up the value of all the different goods and services that are produced for money in the economy. GDP is thus one measure of the total value of the work we do – but only the work we do for money” (Stanford, 2008, p. 25).

“The idea that broader political-economic forces shape the conditions in which overexploitation, degradation, or pollution of natural resources occurs is one of political ecology’s most important theses” (Guthman, 2011, p. 8). The danger of allowing the GDP to be used as a proxy for human wellness is that states begin to value increasing GDP. However, it also can mask income disparity and contribute to environmental degradation (Costanza et al., 2014). Thus, government focus on increasing GDP can be harmful to citizens.

Countries also allow the economic elite to dictate state policy by allowing them to collaborate on the guidelines—including dietary guidelines—that countries create as part of the policy package. This is a function of, as Gramsci describes:

The ‘spontaneous’ consent given by the great masses of the population to the general direction imposed on social life by the dominant fundamental group; this consent is ‘historically’ caused by the prestige (and consequent confidence) which the dominant group enjoys because of its position and function in the world of production. (1989, p. 12).

The 2007 version of Canada’s Food Guide (Health Canada, 2007) had a 12-member Food Guide Advisory Committee, of which “25 per cent of the people ... were employed at the time by corporations whose primary [economic] interests would be affected by the Guide’s very recommendations” (Freedhoff, 2015).

Countries may selectively support key industries, including agriculture (Barichello et al., 2009), through subsidy or other means. In neoliberal Canada, “[t]here is a statistically significant and positive relationship between transfers to agricultural producers and conservative power” (Tolhurst et al., 2013). Tolhurst et al. surmise this is the an effort to buy votes among farmers, who are traditionally socially conservative (2013). “The result is that farmers wield out-sized influence, even in relatively small numbers” (McKenna,

2013). This is an inequitable advantage that food production industries are provided at the expense of citizens (McKenna, 2013) and for the benefit of the Conservative party (Tolhurst et al., 2013), and an example of the paradox of neoliberalism: the economic regulation of state activity.

Finally, when ‘value’ is assessed as ‘profit potential’, any proposal that threatens profit potential may either be ignored or attacked outright to discredit its proponents. This is well-documented in the case of the tobacco industry (Bates & Rowell, 1998), and recent investigations have demonstrated that the same strategy has been used by the sugar (Lustig, 2017; Taubes, 2007, 2016) and food oil (Taubes, 2017; Teicholz, 2014) industries. There are extensive lobbying communities in Canada⁷ and internationally with the globalization of trade whose sole mission is to ensure that profits for their industry are maintained or increased, often through subsidy or other direct government intervention, such as agribusiness subsidy, trade agreements, and nutritional guidelines. This is one important avenue of influence for business over the food system.

2.3 The Literature on Obesity Discourses

The myriad ways that obesity is viewed by society has implications for the ways that people perceived as obese experience their everyday lives. As noted by Ellison, McPhail and Mitchinson: “Obesity is a culturally produced idea with social effects” (2016, p. 4).

Society’s treatment of obesity is, in turn, informed by the dominant official discourses on

⁷ At the time of writing, there were more than 1200 actively registered lobbyists in Canada on a search of the following terms in the Officer of the Commissioner of Lobbying of Canada’s web database (<https://lobbycanada.gc.ca/app/secure/oclr/lrs/do/advSrch>): agri* OR food OR dairy OR cattle OR beef OR pork OR pig OR farmer OR egg OR grain OR wheat OR canola OR corn. This is not including the registered lobbyists for food brands (such as Nestle, Coca-Cola, Pepsi) that also have active lobbyist registrations.

obesity, many of which are tacitly reproduced in the obesity literature with little critical thought given to their origins.

“[C]oncerned that the work of the humanities and social sciences was not being heard in the discourses on the obesity epidemic” (Ellison et al., 2016, Introduction, para. 1), Ellison, McPhail and Mitchinson, eds., published *Obesity in Canada: Critical Perspectives* (2016) to present a collection of recent work of critical obesity researchers from a Canadian perspective. These and other critical obesity researchers identify many of the overarching themes that, while sometimes not clearly articulated, underpin much of the mainstream obesity discourse. In this section, I present a summary of the literature relating to the dominant ways that obesity is characterized: obesity as a moral issue, obesity as a problem of environment, and obesity as catastrophe.

Moralizing Obesity

Historically, obesity has been problematized by the dominant narrative in many ways, but one of the primary ways that obesity has been characterized is as a moral failing. Gilman claims that as far back as the 1800s, fatness reflected an “unreasonable neglect of [the] body, a body which should be ruled by reasonable acts” (2017, p. 434). Largely because of the misunderstanding of the etiology of obesity and the effectiveness of interventions to address it (discussed earlier), “weight has come to represent a significant marker of the level to which one is seen to deserve ‘healthy’ status” (Ward, 2016, p. 236). This deservingness is linked to virtuous behaviours, in that “The healthy body has come to signify the morally worthy citizen—one who exercises discipline over his or her own body, extends the reach of the state and shares the burden of governance” (LeBesco, 2011). Obesity discourse reflects and reinforces neoliberal rationalities of rule and self-

governance (Guthman, 2009). The responsibility that all citizens have, in this context, is to maintain a fit body, and failing to do so is a failure to self-govern. It renders one prone to becoming the object of judgment for their failure to adhere to bodily norms through either their lack of discipline or their lack of reason, both of which are viewed as moral failing—as succumbing to vice.

Fat shaming, according to Gilman, is a legacy of the eighteenth century (2017), and is thus not new. It was, however, dependent on context: there were ‘fat-cheery’ bourgeoisie and all others who were ‘fat-bloated’ (2017, p. 435). The “shift in thinking about fatness is concomitant with the move to a neoliberal form of governmentality described by Foucault” (LeBesco, 2011), wherein citizens are admonished to be self-regulating for the benefit of the state. “[O]besity seems to violate a set of norms of self-efficacy that some call *healthism*, norms that are strongly related to neoliberal notions of governance” (Guthman, 2011, p. 47). Although LeBesco frames this as a shift in thinking, it may merely be an intensification of the fat shaming of the 1800s, and does reflect the ideal of the “reasonable man” (Gilman, 2017). “Foucault sees us as normalizing certain kinds of bodies and making docile, obedient subjects ‘voluntarily’ work to approximate these norms under a gaze that keeps deviance under surveillance” (LeBesco, 2011), an example of coercive power that is facilitated/mediated by a culture of near-constant surveillance. “Unlike other stigmatized practices such as smoking, alcohol consumption, or drug use, weight’s high visibility makes it highly susceptible to discrimination” (McNaughton & Smith, 2016, p. 134), and making it easy to recognize when (s)he is not appropriately self-governing.

Contributing to the general acceptance of the healthism perspective is the large degree of negative stereotyping of the fat body in the discourse, even in the *scientific* discourse.

“[T]he visibility of fatness and the fact that many find it aesthetically displeasing seem to influence scientific and public understandings of it” (Guthman, 2011, p. 25). Guthman argues that “Scientific discussions of obesity employ all sorts of metaphors that paint the picture in generally unflattering ways. Fat cells are often portrayed in ways similar to fat people: they are described as yellow, bloated, greasy, flabby” (2011, p. 14). “Fat stigmatization ... accords higher status to those who are not fat, and healthism positions those people “as more responsible and knowing, regardless of what, if anything, they do to be thin” (Guthman, 2011, p. 192). Even the term obese has Latin roots grounded in the concept of gluttony which means that “identifying someone as ‘obese’ is judging their behaviour as well as their apparent physical state” (Ross, 2005, p. 92).

Likewise the term overweight implies that a person has a weight surpassing what would constitute a normative weight, and the term morbidly obese evokes emotions from a sense of dislike to one of loathing (Guthman, 2011). The negative stereotyping of the fat body in the discourse, including the scientific discourse is a contributing factor to the widely acclaimed healthism perspective as it frames obesity as a negative—even repulsive—physical state, arising out of gluttony and lack of self-restraint.

In this vein, obesity is framed as a choice of behaviours, and is problematized as a matter of stubbornness or unwillingness to conform to healthism (Gard & Wright, 2005).

Additionally, Gard and Wright argue that public health officials also use this type of rhetoric to imbue responsibility on the non-compliant masses. The theme of choice, particularly of *lifestyle choice*, is frequently seen in obesity discourse, even in the absence

of evidence supporting its influence on obesity. Rational choice theory assumes that an individual is properly equipped with the pertinent information to make sound choices and decisions. Sound judgement cannot be made when lacking pertinent information. Ironically, despite the supposed freedom of choice and the ability to avail oneself of market goods: “it is the one who is ignorant of the significant determining factors and who acts under the immediate pressure of determinants unknown to him who is least free” (Mannheim, 2015, p. 169). In an environment overcome with contradictory information, rational choice becomes impossible.

Unfortunately, the acceptance of the moral account of obesity has contributed to what is called scientific problem closure. “Once we resign ourselves to [thinking] obesity is just a matter of gluttony and sloth, and you just need to eat fewer calories, we stop asking questions. And we stop trying to solve the problem, because the solution is ‘we just need to try harder’” (Bailor, 2014). As well, “the fat body is reframed as a drain on health care because fat people make bad personal consumption choices” (LeBesco, 2011, p. 155). The repercussions become framed as financial costs to society rather than personal costs to the obese person. It then becomes easier to argue that the fat person should pay for their poor choices.

“[I]n the neo-liberal era, the contemporary private insurance industry is characterized by increasing risk segmentation or the unpooling of risks” (Ericson et al., 2000). They are frequently distributing health promotion brochures about prevention that:

dutifully instruct about what those healthy levels (always quantifiable) are, and highlight the bargain of preventive care as opposed to the cost of long term care for a chronic condition. In doing so, they set the stage for higher costs, even denial of coverage, for those who fail to comply with such healthy pursuits. (LeBesco, 2011, p. 156)

Some companies distribute physiological body monitors such as pedometers and heart meters that they use to incentivize their customers. They reward compliant behaviours with decreased insurance premiums, “but only for those fortunate enough to be included” (Ericson et al., 2000, p. 554) among the compliant. This goes beyond the already decreased premiums that normal weight customers often begin with relative to their obese counterparts (Ericson et al., 2000). As a result, health insurance companies in Canada and the United States also endorse a particular health discourse or healthism perspective, as they can profit from it by demanding higher premiums from higher risk groups.

These programs are generally accepted by society because society also generally accepts the healthism perspective. “While some “governmentalities” are directly coercive, those associated with liberalism tend to act through the will of individuals, who are educated to exercise rights and responsibilities (thus belying the idea that they are eminently free)” (Guthman, 2011, p. 18). We are enculturated to the healthism perspective, which mirrors the supposed meritocratic vision of a capitalist utopia, where those who are virtuous are successful (thin), and those who are not are unsuccessful (fat). “[P]roblems are constructed as something for an individual to solve, risks something that an individual bears and responsibility and blame (for selecting the wrong solutions, making the wrong choices) can then become focused on the individual” (S. Brown et al., 2013, p. 335).

Given that it is the energy balance hypothesis, and not the sugar hypothesis, that has won out as the explicatory narrative of obesity; it is unsurprising that the focus on prevention and treatment is the individual regulation of diet and exercise rather than state regulation of the food system. The individual is “encouraged to take radical measures to prevent one’s own, familial, or communal obesity. Managing obesity thus becomes

operationalized through managing individual behaviours in the contemporary risk society” (King-White et al., 2013, p. 92).

The Environmental Account of Obesity

There was a slight reframing of obesity around the very turn of the 21st century, away from focusing on the individual and toward encouraging improved community planning. The concept of obesogenic environments, a term first used by Egger and Swinburn (1997), outlines particular ecological and behavioural factors that could contribute to obesity in humans or an environmental account of obesity. The environmental account of obesity is underpinned by the supposition that people are exposed to risk factors associated with modernity which will lead to obesity. These include the concept of ‘screen time’ (television and computer use), motor vehicle transportation rather than active transportation (e.g., walking), and the existence of what are called ‘food deserts’, where fast foods are available but more ‘wholesome’ foods like fruits and vegetables are less available (Gard & Wright, 2005, p. 28). According to Paradis, “*Risk ...* has established itself as an important part of the medical discourse” (2016, p. 75).

The assumptions of the environmental account of obesity are like those underpinning the moral account of obesity. The environmental account also leads to the same proposed fix of balancing energy-in with energy-out to achieve health (Gard & Wright, 2005). It is virtually no different than the energy balance hypothesis, as at its core it is based on the idea that obesity is the result of unhealthy food intake and fewer opportunities for physical activity. It continues to ascribe blame to the individual for their obesity.

Kirkland and Guthman argue that some of the empirical assumptions of the environmental account of obesity are “wrong or at least not sufficiently well established” (Guthman, 2011; Kirkland, 2011, p. 465). Kirkland further argues that if policies are based on the environmental account of obesity they will “end up being punitive, ineffective, and patronizing and will come with burdensome unintended consequences that will hurt the groups feminists claim to most want to help” (2011, p. 465). As Kirkland further notes:

A responsabilizing version of the environmental account would stress the need to give people more information to make better decisions about self-care: calorie labeling, cooking classes, incentives to join gyms, and so on. These policies remake the environment in ways that support more choices and information to citizens modeled as consumers. (2011, p. 467)

“[S]tudies that have attempted to show that (crucially, not whether) the built environment makes us fat are rife with already existing assumptions about the causes of obesity as mediated through the environment” (Guthman, 2011, p. 15). Further, these studies often focus on food at the individual level rather than focusing on the broader food systems (Guthman, 2011).

[T]hose who share the idea that the food system is somehow responsible for the obesity epidemic tend to focus on food consumption more than food production, and tend to favor educational and consumerist approaches over food and farming policy as a means to transform food systems—and thus to affect obesity. (Guthman, 2011, p. 19).

A focus on food systems may be more impactful if truly evidence-based decision-making were to be employed to change policy and practice.

In sum, while giving people more information to make better decisions is not intrinsically bad, part of the problem with this strategy is that it is based on flawed assumptions, may be disseminating flawed information, and continues to be individually responsabilizing

and behaviour-based. The environmental account of obesity is like the energy balance hypothesis, as at its core, it is based on the idea that obesity is the result of unhealthy food intake and fewer opportunities for physical activity. It continues to ascribe blame to the individual for their obesity, despite what initially appears to be a collective approach.

[T]he environmental approach to fighting obesity is supposed to be collective, not responsabilizing. Responsibilizing individuals is not really environmental in the obvious sense of the word, after all. But because the animating problem is that poor people are fat, the focus on weight loss becomes the metric of success. The aim, then, is to get the poor and the fat to make virtuous personal choices to combat a contaminated world. (Kirkland, 2011, p. 467)

Another limitation of the obesogenic environments argument is that it fetishizes and idealizes a past that never existed, and this kind of idealizing discourse has been a feature of healthism for a century and a half (Gard & Wright, 2005, p. 28). “Recent evidence suggests that modern city folk are not much less active, if at all, than our distant ancestors or our recent ancestors as demonstrated by existing forager communities, or our foraging cousin primates” (Ross, 2005, p. 86). We hearken back to a better time—which never existed—with what can only be an artificial nostalgia.

Catastrophizing Obesity

Gard and Wright note that mass-media reporting presents overweight and obesity statistics as “a disaster and warn of a looming global health catastrophe” (2005, p. 17). Given that the dominant obesity narrative frames obesity as a modifiable risk factor, obese people are necessarily seen as contributing to rising health care costs, and a burden to society. Citizens are expected to minimize their effect on health care costs through self-regulation (LeBesco, 2011). Guthman asserts, “At the most basic level, what seems to agitate people about obesity is the cost of health care for the obese. The media has played

a substantial role in promulgating the message that the obesity epidemic is costly” (2011, p. 47).

[T]he apparent consensus is that the costs of dealing with obesity are substantial and that the broader public pays for obesity because medical costs are pooled, so that the healthy pay for the unhealthy. Medical professionals have certainly signed on to this perspective. In researching this book, I listened to many complaints about the costs—and inconveniences—of treating obese patients from doctors and nurses. Many public health professionals and food system advocates share this view, as well. A great number of published articles and conference talks begin with a quick nod to the growing public burden of obesity-related health expenditures. (Guthman, 2011, p. 48).

Rising obesity rates are very commonly described as an “epidemic” in the scientific literature (Ross, 2005) which is tacitly understood to be the fault of the obese, who are (apparently) ‘unwilling’ or unable to do the things that would somehow resolve their obesity ‘problem.’ And the catastrophizing language is frequently used when the obese are further responsabilized for the burden that they are accused of placing on the general population for their health care costs. Because neoliberalism represents a shift from collectivism to individualism (Harvey, 2005), rather than society collectively supporting all people regardless of physical status, a catastrophizing narrative in a neoliberal climate creates a blaming and shaming atmosphere for people who are framed as contributing to higher health care costs.

2.4 Literature Review – Summary

Science is socially constructed, (Kuhn, 1996; Latour, 2010). It can reflect the ideological climate of the time (Katz Fishman & Fritz, 1980, p. 32), and is impacted by bias through who performs it and who is studied. It often fails to account for its context and to adapt to new information (Foucault, 1972, p. 184).

In the case of obesity research, sufficient causality between obesity and its supposed consequences has not been established (Guthman, 2011; Ross, 2005). Further, much of obesity research has been conducted by and on (Dresser, 1992) white men, which has contributed to biased findings. As neoliberal hegemony arose, so too did the dominant obesity paradigm.

Neoliberalism, as political-ideological system, predominantly legitimized the empowerment of its originators: white men of means. Neoliberal governance allows market interests to contribute directly to policy documents that can increase their profit potential. Neoliberalism also extols the concept of free choice, and from that comes the healthism perspective—that vice leads to obesity, a rational consequence of poor choices.

Obesity discourse has been influenced by neoliberal ideology, or at least the two have developed in tandem. The very term obesity is rooted in ideas of gluttony, and obesity has come to be seen as bodily neglect, shameful, and as demonstrating an unwillingness of the obese to appropriately self-regulate. While the discourse appeared to change in the late 1990s, shifting to an environmental perspective, the underlying message was almost identical. Framed as an environmental problem: obesity demonstrates an inability [because of external factors] to appropriately self-regulate.

Finally, there has been much focus on the economic relationship of obesity with society, which may be a direct influence of the primacy of the economy and markets and the desire to reduce the government's contribution to health care expenditures.

Responsibilizing the obese for their condition justifies extracting higher insurance premiums and facilitates public shaming of the obese person as an economic burden.

Chapter 3

3 Methodology

In this chapter, I describe my epistemology, ontology, standpoint, assumptions, problematic, method and the objective of this analysis, in addition to its limitations. The impetus for the thesis is the tension I identified in the obesity discourse from my dual standpoint as an obese woman and an analyst writing reports for the public that address obesity. My argument is that neoliberal fetishes have distorted the food system and the common perceptions of obesity.

I will describe how the analytic question developed, and how I approached the analysis of the ways that neoliberalism influenced the development of and the discourse on obesity. For me, the dominant narrative on obesity was uncritically internalised until about five years ago, when I was exposed to an alternative theory. The tension between the old understanding and the new took some time to work through in my mind, led me through a rabbit hole of new (to me) information, and sparked a deep interest in this topic.

3.1 Epistemology

Recalling her perspective as a participant in the women's movement, Dorothy Smith wrote: "For us, the struggle was as much within ourselves, with what we knew how to do and think and feel, as with that regime as an enemy outside us" (2005, p. 7). I experienced a similar struggle in the process of unpacking the impact that the science of obesity has had on my life.

Nearly two decades ago, I studied anthropology and sociology. In the time since my course work, I have been groomed—whether intentionally or not—to unquestioningly

accept the established scientific narratives presented to me in government texts. My working life has been more recent and consuming than my earlier exposure to critical ways of knowing acquired from my university studies in the social sciences. As a result of my exposure to and tacit acceptance of these narratives, I had—without realizing it—blindly accorded them my trust. Rather than applying any critique to official texts, I fell into the trap of treating science, or positivism, as a religion, thinking that *science produces knowledge in reliable, mechanistic ways*. But science does not reliably, mechanistically produce knowledge, and science is itself not an objective undertaking.

This project alerted me to the narratives that I had uncritically internalized. It challenged my knowledge, and challenging this perceived body of knowledge destroyed the ‘factishness’ (Latour, 2010) of much I thought I knew. Trusting in institutions, I had abandoned the relativistic understanding that often features centrally in anthropological and sociological inquiry and adopted an uncritical acceptance of information presented to me. Because of the information I have been exposed to and the changes in my understanding of what I had considered to be accepted science, I feel have rediscovered the zetetic⁸ attitude of scholarly inquiry. While my way of knowing is grounded in rationalism, I incorporate skepticism and critical thought when considering ‘established’ knowledge or conducting analysis. This places me in the area of post-positivism, as described by Grix (2010).

⁸ “adjective: Pursuing by inquiry, search, or investigation.” (Garg, 2017)

3.2 Ontology

I believe that there is an objective reality to be known, but I increasingly recognize the observer bias (the relativism) in the perception, recording, interpretation and presentation of observations. All knowledge is biased as it depends on the standpoint of the knowledge producer—it is context-dependent. Further, others' descriptions of their observations are equally as susceptible to bias (Kirby & McKenna, 1989).

Critical realism, as described by Grix (2010, p. 85), is at “the core of post-positivism,” which places it in between the positivist and interpretivist research paradigms. “[C]ritical-realist scholars have attempted to combine the ‘how’ (understanding—which is linked to interpretivism) and the ‘why’ (explanation—which is linked to positivism) approaches by bridging the gap between two extremes” (Grix, 2010, p. 85). In the process of my analysis, I abandoned my former embrace of scientific realism in favour of critical realism.

I still identify as a realist when it comes to ontology—that is to say that I believe there is a knowable, observable reality that exists—but I have come to understand that I can only know some of that observable reality, and my observation may reflect my own biases, such that what I perceive and describe may not be an accurate reflection of reality (Adkins, 2002; Kirby & McKenna, 1989). This combination of ontology and epistemology places me among the critical realists. Bias shapes our interpretation of reality—how we perceive and describe it is immanently affected by our own biases.

3.3 Standpoint

Recognizing that my personal experiences and knowledge will colour my understanding of these subjects, I will briefly describe here the details of my lived experience which may contribute to my own biases, but which also may contribute a measure of insight into my topic.

I begin this analysis from a dual standpoint: as public health analyst who subjectively interacts with and reproduces obesity discourse in her everyday work, and as an obese woman who is the object of obesity discourse in her everyday life. In the course of my everyday work and despite the disjuncture between the public health account of obesity and my own experience as a woman perceived by society as obese, I have been complicit in uncritically reproducing the dominant public health discourse on obesity. I also internalized much of the shaming narrative presented in obesity discourse, feeling as though I had failed at achieving society's body standard. My lived experience locates me in two subjectivities relative to this research, I am speaking both as a reproductive agent for the current discourse, and as a person marginalized and chastised by the discourse I reproduce through my everyday labour.

My Background

I have worked in health and social research for 18 years, the majority of which has been with local public health agencies. In my work in health research and writing, I was exposed to a variety of reports specifically about obesity (PHAC & CIHI, 2011; Roberts et al., 2012) or reports that include obesity as an health indicator and/or risk factor for health outcomes (Cancer Care Ontario, 2013). Most of these reports have in common the statement that obesity rates are rising, the statement that obesity leads to other serious

diseases, and some statement about poor diet and low exercise levels being the “causes” of obesity. The underlying message is that by not exercising and by overeating, the obese person is *choosing* to be obese. For most of my life and most of my career, I tacitly accepted the ‘logic’ that implied that obesity was a result of overeating and under exercising, without critical consideration.

Aside from my work as a health data analyst, I am also an obese woman, and I have been obese about 20 years. As an obese person whose work entails reading and writing reports on obesity, I now find myself frustrated by their subtexts. Given my own attempts (and there have been many) to lose weight, and the overall lack of success I had historically experienced during these attempts, I find the implication that people like me *choose* to be obese through our behaviour to be both unsettling and insulting.

Moreover, despite my frustration at being labelled, I *internalized* those labels, which to some extent reduced my estimation of my worth and worthiness because of the discourse around obesity in our culture—discourse that marginalizes the fat person. Given the choice, it is highly unlikely that people would *choose* to socially marginalize themselves by becoming or staying obese in a culture that marginalizes, humiliates, and shames them, and certainly not by the increasing rates we’ve witnessed globally over the last four decades (World Health Organization, 2015).

My Paradigm Shift

“In a science ... a paradigm is rarely an object for replication. Instead, it is an object for further articulation and specification under new or more stringent conditions” (Kuhn, 1996, p. 23).

About twelve years ago, two of my close friends followed the Atkins® diet. Very briefly, the Atkins® diet is a very low carbohydrate, moderate protein diet that can be higher in

fats, particularly animal fats, as meats, cheeses, fish and eggs are recommended to be eaten liberally. Both of my friends following the diet were very successful in both losing weight and improving their self-perceived wellbeing. At the time, I was not supportive of the diet they were following because it conflicted with what I knew about nutrition. Nevertheless, it was effective for them. In subsequent years, after moving and job changes, they reverted to eating a more or less ‘standard’ Western diet, and regained much of the weight they had lost. They have revisited the Atkins® Diet a few times, each time successfully losing weight, although with a return to a more standard diet that incorporated carbohydrates, the weight would return and their energy levels would diminish. The Atkins® diet worked when they followed it, thus, I recalcitrantly remained a skeptic because I felt this diet *couldn't* be healthy.

Four years ago, I experienced a paradigm shift that changed my understanding of the etiology of my own obesity, and spurred me to make permanent changes to my diet.⁹ I happened upon a TED Talk presented by physician Peter Attia (2013), who described an experience he had as a surgeon working in an emergency department with an obese type 2 diabetic patient who required an amputation. This talk was a call to reconsider the etiology of obesity and type 2 diabetes, and its implications for me were truly life-changing.

During his talk, Attia (2013) considered his own internalized judgement pronouncement on this diabetic patient, who he believed had ‘caused’ herself to require a foot amputation

⁹ I use the term diet to refer to a way of eating rather than as a short-term modified way of eating to achieve a weight-loss goal.

by not controlling her type 2 diabetes. Although he provided the same standard of care he had to other patients, he admitted to feeling little sympathy for this patient in contrast to another patient he encountered that night. He blamed the patient for her condition as a consequence of his medical training—the ‘facts’ he had internalized about the process of becoming a type 2 diabetic: you eat too much of the wrong kinds of food, you become obese, you become type 2 diabetic. He described his way of thinking about diabetes as unquestioning.

Three years after his experience with the obese patient, Attia himself developed metabolic syndrome, despite following a ‘healthy’ diet according to American dietary recommendations—which are similar to ours—and exercising in excess of three or four hours a day (Attia, 2013). He became skeptical of conventional dietary advice and subsequently became one of the many voices in the growing body of researchers who are questioning the value of having *any* carbohydrate in the diet, instead promoting a high fat, moderate protein and low carbohydrate diet based on the results of promising research in the fields of nutrition, metabolism and endocrinology.

Following my introduction to the idea of a low carbohydrate, high fat diet (Atkins® diet recommendations) through watching various lectures or interviews by leaders in the field—including Tim Noakes (2014), Stephen Phinney (2014), Jeff Volek (2013), and Jay Wortman (2013), I modified my diet to follow a high fat, moderate protein, low carbohydrate macronutrient ratio. Within just two weeks of my dietary shift, I experienced a dramatic increase in energy levels—I no longer felt tired all the time, and climbing stairs became easy. This is an important observation, on which I will elaborate later. Within a month, I eliminated the arthritic pain in my hands and feet that I had

experienced for about a decade. Within a year, I lost eighty pounds of body fat without suffering hunger. My health has vastly improved by doing most of the things I have been told not to do over the last few decades.

While I remain obese, I experience much better overall health following this modified diet than I had over the twenty years of adulthood since I first became obese. There must be something to the Atkins® diet that supports my health better than what I used to consume in my standard diet, which largely aligned with Canadian nutrition guidelines. These, like the American guidelines, included decreasing fat recommendations over the last several years (Attia, 2015). Because I believed that these guidelines were based on solid evidence—these texts and nutrition discourse had influenced my understanding of nutrition—I fundamentally could not reconcile adding fat to my diet. Once I became convinced that the science underpinning dietary recommendations on fat is dubious, I could modify my diet without fearing negative consequences. The nutrition discourse had regulated my behaviour for most of my life in ways that proved to be both harmful to my body, and as I have mentioned above, to my self-esteem.

It is now clear to me that the supposed evidence for dietary recommendations has informed dietary recommendations in Canada and thus my previous understanding of what constitutes a healthy diet may be flawed. The tension between the discourse and my (and many obese peoples') lived experience of the repercussions of nutrition and obesity discourse was the catalyst developing my problematic. This thesis is my attempt to understand how and why dietary fats came to be vilified, and why we blame the obese for their weight status.

3.4 My Assumptions

My assumptions in approaching this topic are informed by my own formal and informal critical appraisal of research articles, books and presentations of research.

My first assumption is that the tension that I identified between the discourse of obesity as I understand it from my public health analyst standpoint and the understanding I have of obesity based on my standpoint as an obese woman reading critiques of obesity science is a legitimate location of tension worthy of further study. As I am approaching this analysis with a kind of dual standpoint (Smith, 1987)—I am my own informant from the perspective of the obese person who is the object of obesity discourse and I am my own informant from the perspective of the health care worker accepting and perpetuating the obesity discourse to which I am thus subjecting others—this is a project unlike anything I have previously undertaken.

3.5 Problematic

Both the process of scientific inquiry and the development of scientific facts have contributed to the current state of the knowledge and discourse about obesity. These are affected by social environments in which the science is undertaken and the facts are produced. “How we know health depends on how we talk about it, and how we talk about it shapes how we think about it” (Guthman, 2011, p. 14).

There is tension between the accepted discourses in obesity and nutrition and people’s lived experience of obesity. The energy balance hypothesis of obesity implicates people’s behaviour as a central cause of obesity, and most public health strategies to address obesity centre around behaviour change—either in terms of individual choices or freedom

to make choices. If obesity is merely a matter of applying oneself to a fitness regimen and a healthy diet as prescribed by Canada's nutrition guidelines, there would be few obese people left in Canada. That, however, is not the case.

The alternative theory, the metabolic theory of obesity, has existed for at least the last century but has gotten scant attention as the energy balance hypothesis achieved primacy in the nutrition discourse. There are certainly reasons why one discourse has become hegemonic, while the other has been relegated to the fringes, and these reasons appear to be related to the prevalent ideology of the latter part of the 20th century to the modern day: neoliberalism.

I explore the relationship between the historical, colonial policies and modern nutrition policies in North America since the late 1970s and the capitalist neoliberal ideology. More specifically, I examine neoliberal discourse, the food system, and the common perceptions of the nature of obesity. Neoliberalism, I believe, has itself created the current obesity epidemic.

Public health discourse frequently addresses the issues of obesity and overweight status—for example, in Ontario, body mass index (BMI) is considered a core indicator of public health (APHEO, 2018), and it has featured prominently in the guidance documents for the provision of public health services in Ontario since the early 1980s (Ontario Ministry of Health, 1984, 1989; Ontario Ministry of Health and Long-term Care, 1997, 2008, 2017, 2018). The Canadian Community Health Survey (CCHS), a survey of the health of Canadians conducted by Statistics Canada since 2000, presents as one of its indicators the proportion of the population who are obese and the proportion who are overweight

according to self-reported BMI (Statistics Canada, 2019b). In public health in Canada, weight matters. However, the reasons weight matters are infrequently addressed in the public health literature.¹⁰ Evidence citations are rarely provided, and this is often the case with many public health reports destined for public consumption. I surmise there may be an assumption that normative understandings of the etiology and relationships among diseases and risk factors should not require additional substantiation in these reports, based on the general normative acceptance of the energy balance theory of obesity.

This project explores the influence of neoliberal ideology and power structures by examining the discourses circulating about obesity. The analysis is presented in four parts. The first part presents the modern public health discourse on obesity and considers the development of the discursive elements since the mid 1970s—what Michael Foucault (1972) would call the archaeology of the discourse. The second part presents the development of nutrition science and its influence on the dietary guidelines in Canada. I examine the connection between it and the scientific evidence—the genealogy of the discourse on obesity and the archaeology and genealogy of its component parts. The third part describes the development of American and Canadian dietary guidelines published in the late 1970s. In the final part, I consider the characterization of the obese person in the texts examined.

The discourse underpins how obesity is generally understood and addressed in Canada, and is observable in modern public health texts (Lalonde, 1974; PHAC & CIHI, 2011; Public Health Ontario, 2013; Senate Standing Committee on Social Affairs, Science and

¹⁰ Author's observation.

Technology, 2016). These texts were selected because I consider them to be representative of moments in public health in Canada that speak to the contemporary understanding of obesity that public health had adopted at those points in time. For the history of the development of obesity science, I relied on the reporting as presented by various authors, including Taubes (2007, 2016), and Teicholz (Teicholz, 2014), who interviewed many of the central figures who contributed to development of nutrition research in the 20th Century, and Yudkin (1972), who recounted his experience as a nutrition researcher of navigating the social organization of that landscape.

Thesis Statement

I argue that neoliberal ideology has influenced the scientific understanding of the etiology of obesity, the development of the obesity epidemic itself, and the responsabilizing narrative of the causes of obesity. Further, I argue that the commonly understood etiology of obesity and the responsabilizing narrative of its causes both contribute to the public health understanding of obesity and to the public health recommendations to address it.

3.6 Method

“For the scientist the world is the object of the study; for the sociologist it is the scientist-studying-the-world that is the object.”

(Barnes et al., 1996, p. 29)

With respect to the application of methodologies, I felt that through applying multiple methodologies (two approaches to discourse analysis, described in section 3.6 below) I would be able to better understand the context of the development of obesity discourse through methodological triangulation. Ethnographers commonly use multiple

methodologies to more richly understand the culture of the people they study. I hoped that employing methodologies developed by Michel Foucault (1972, 1994) and Dorothy Smith (1987, 1990, 1999, 2005) would provide more information through which to understand the discourse I studied and allow me to understand how modern obesity discourse came to be.

The primary methodology used for this study was discourse analysis, and this was approached from the perspectives of two different but complementary methodologies: the archaeology and genealogy of discourse (Foucault, 1972, 1994) and institutional ethnography (Smith, 1987, 1990, 1999, 2005). As my undergraduate training is in the field of anthropology, I was well acquainted through my education with anthropological methodologies including archaeology, genealogy, and ethnography. I was interested in how Foucault and Smith applied these methodologies to their sociological oeuvres.

I believe that analysing the language used in these documents using techniques including Michel Foucault's application of archaeology and genealogy to discourse analysis (1972, 1994), and Dorothy Smith's application of institutional ethnography to discourse analysis (1987, 1990, 1999, 2005), can help to unpack the social, political and economic relations that influenced obesity prevalence and attitudes about obese people. Close attention to language choices will elucidate the ways in which scientific studies are assumed to produce *facts* rather than *theories*—the conclusions drawn by the researchers wrongly taken at face value rather than critically considered.

These methodologies have much to offer the investigator when used in conjunction (Satka & Skehill, 2012).

[B]oth make a noteworthy but different effort to investigate macro social forces, in particular from the point of view of power and governance, by taking advantage of a careful analysis of the micro social, e.g., the front-line practices in organizations. (Satka & Skehill, 2012).

Put another way, both attempt to reveal the roles that power, governance, and other regulating macrosocial factors have in producing discourse and thus in regulating and interacting with people's everyday lives. They undertake to identify the relations that are at play between and among the discourses they study (Foucault, 1972, 1994; Satka & Skehill, 2012; Smith, 1987, 1990, 1999, 2005). That they propose differing strategies and differing viewpoints from which to undertake this work makes them potentially synergistic methodologies.

Discourse Analysis: Two Ways

When Foucault wrote *The Order of Things* (1994), he set out to use a comparative method:

to present, side by side, a definite number of elements: the knowledge of living beings, the knowledge of the laws of language, and the knowledge of economic facts, and to relate them to the philosophical discourse that was contemporary with them. (1994, p. x)

Similarly, I set out to explore the political environment, the ideological landscape, and the 'knowledge' of obesity as it relates to humans. I chose a Foucaultian lens because as I read more about this topic, I understood there were connections between the history of obesity and nutrition science and the political and social contexts at the time of their development. This interest in the development of the science was the genesis of my problematic.

Smith writes that texts are "embedded in and organizing relations among subjects active in the discourse" (1987, p. 214). This implies that knowledge can be deconstructed and

better understood by considering the contexts in which it is created, since “Knowledge is socially organized,” and “its characteristic textual forms bear and replicate social relations” (Smith, 2005, p. 27). I draw upon Smith’s institutional ethnography because it provides a means to centre the perspective and activities of the marginalised (e.g., the subjects).

In the context of obesity, marginalization applies as a risk factor associated with obesity (McNaughton & Smith, 2016), and as a result of being perceived as obese (Brady & Gingras, 2016; Ellison, 2016; Rochefort et al., 2016; Schoemaker Holmes, 2016; Ward, 2016). The dominant discourse is shaped by those with power and agency, which marginalized groups are frequently not granted. While this thesis does not delve deeply into the concept of marginalization as it relates to obesity, Smith’s (2005) approach seems best suited to creating the space for the exploration of obesity discourse from the perspective of those who are marginalized by it.

There is a wealth of textual information documenting the development and reproduction of obesity theory and discourse. Thus, applying discourse analysis helped order and adumbrate the analysis of obesity theory and its discourses, how they were created, how they continue to be reproduced, and the interactions the discourses have on the everyday lives of people.

An Archaeology of Knowledge

We must grasp the statement in the exact specificity of its occurrence; determine its conditions of existence, fix at least its limits, establish its correlations with other statements that may be connected with it, and show what other forms of statement it excludes. (Foucault, 1972, p. 28)

Foucault's conceptualization of discourse and his methodology, within which he includes the work of 'archaeology' and 'genealogy', aims to trace the origins of discursive elements and to determine by what rules and in what context they came to be.

"For Foucault, discourses are practices (composed of ideas, ideologies, attitudes, courses of action, and terms of reference) that systematically constitute subjects and objects of which they speak" (Schwandt, 2001, p. 58). He writes about them as though they were their own distinct entities: "groups of statements which, when first formulated, were distributed, divided and characterized in a quite different way" (Foucault, 1972, p. 22), also noting that even these divisions deserve to be considered as having their own discursive relations.

Discourse analysis is also, for Foucault, the analysis of the *possibilities* a discourse could take: "The description of the events of discourse poses [the] question: how is it that one particular statement appeared rather than another?" (1972, p. 27). Studying textual materials with the goal of understanding how they came to be is a familiar activity in archaeological studies. Archaeologists study material remains to discover, describe and understand human behaviour and cultural patterns; and this is not restricted to the study of ancient cultures—archaeologists also study living cultures (Kottak, 1996). Satka and Skehill (2012) argue that what Foucault means when he suggests that an archaeological method be applied to discourse is that the investigator should study the historical construction of a discourse.

For this analysis, the archaeology or identification of the prevalent discourses of obesity has been outlined in the literature review. One of the prevalent discourses was that of the

causality of obesity, which has been accepted in the current discourse to be a result of overeating and under exercising and has been connected with notions of willpower and 'healthism'. My analysis will consist of identifying the genealogy of this prevailing discourse and connecting it with contemporaneous political and ideological events and environments through its development.

A Genealogy of Knowledge

Genealogy, or the study of kinship, descent and marriage (or interpersonal relations within a culture), is a primary methodology used by anthropological ethnographers to understand how cultures structure social relationships. "Anthropologists must record genealogical data to reconstruct history and understand current relationships" (Kottak, 1996, p. 23). For Foucault, applying genealogy allows the investigator to explore the relations between discourses or concepts, rather than people (1972). Thus, for Foucault, the primary question of the analysis of discursive events is "how is it that one particular statement appeared rather than another?" (Foucault, 1972, p. 27).

[W]e must grasp the statement in the exact specificity of its occurrence; determine its conditions of existence, fix at least its limits, establish its correlations with other statements that may be connected with it, and show what other forms of statement it excludes. (Foucault, 1972, p. 28)

The archaeology of discourse must be conducted before the genealogy, for to determine how discourses relate to one another one must first know how each discursive element came to be. The archaeological questions I used to help determine how discourses emerged included:

- Who is speaking? Who has the right to speak? Who is qualified/empowered to speak?

- From what institutional site or locus does the discourse arise?
- What preconditions existed that informed the accepted discourse?
- What alternative statements could have been made but were not?

Once these questions were answered, the genealogy of relations among discourses could be mapped. This mapping is rather like the mapping work undertaken when using institutional ethnography, which considers the subjectivities of those who create and reproduce discourse, or whose lives are mediated by these texts.

Institutional Ethnography

Smith is critical of Foucault’s conceptualization of discourse, saying it “displaces the traditional basis of knowledge in individual perception and locates it externally to particular subjectivities as an order that imposes on and coerces them” (2005, p. 17).

While Foucault avoids discussing actors’ subjectivity when considering who is speaking or generating a discourse, Dorothy Smith’s feminist methodology centres on subjectivity.

“[P]roblems of knowledge must be solved with reference to states of individual consciousness—perception, cognition, experience—and the objects they perceive, know, experience, or otherwise apprehend” (Smith, 1999, p. 108). Satka and Skehill (2012)

argue that for Smith, “discourse creates a position for the subject.” Smith describes discourse as:

translocal relations COORDINATING the practices of definite individuals talking, writing, reading, watching, and so forth, in particular local places at particular times. People *participate* in discourse, and their participation reproduces it. Discourse constrains what they can say or write, and what they say or write reproduces and modifies discourse. (2005, p. 224)

Smith locates the individuals as active agents in the production and reproduction of discourses. Smith's approach also shifts the analysis to the subject or the people rather than study them. In other words, she strove to understand and incorporate the individual's subjectivities into the research. Drawing on Smith, my aim is an ethnographer's aim, which is to contextualize a culture's life ways from the involved people's perspective.

Ethnography is the work of describing a culture. The essential core of this activity is to understand another way of life from the native point of view. The goal of ethnography, as Malinowski put it, is 'to grasp the native's point of view, his relation to life, to realize *his* vision of *his* world'. ... Rather than *studying people*, ethnography means *learning from people*. (Spradley, 1979, p. 3)

As Spradley explains, "The essential core of ethnography is this concern with the meaning of actions and events to the people we seek to understand" (Spradley, 1979, p. 5).

Like the anthropological ethnographer, Smith's treatment of discourse analysis through institutional ethnography begins with a grounding in a large amount of data. In institutional ethnography, the investigator seeks to identify some essential tension in the discourses being considered—it is from this place of tension in the data that she will generate the research problematic (Rankin, 2017). Much of the process of institutional ethnography mirrors anthropological ethnography in that the goals of data collection are annotation, thick description, mapping relations and indexing textual information (Rankin, 2017). The object is to arrive at an understanding of how "everyday life is being organized through an institution's ruling practices" (Rankin, 2017)—its ruling relations.

In mapping work, the ruling relations are first *tracked* from the local work of people into the work of other people. Then, the goal is to lay out a display of what is happening (the map), either in words or diagrams, that describes the features of the social practices and their respective forms and relationships. (Rankin, 2017)

The problematic provides the direction or focus of explication while conducting the work of institutional ethnography.

An important component of institutional ethnography is the notion of the standpoint from which to conduct the investigation. Incorporating a standpoint means situating yourself within the context of a particular subjectivity—from the position of a person who is actively engaged with and impacted by the mediating influences of the discourses to be considered (Rankin, 2017; Smith, 1987, 1990, 1999, 2005). “Taking a specific standpoint provides a way to examine how knowledge works; whose knowledge counts” (Rankin, 2017). As Smith states:

The ruling apparatus is an organization of class and as such implicates dominant classes. The working class is excluded from the ruling apparatus. It also excludes the many voices of women and men of color, of native peoples, and of homosexual women and men. (1987, p. 107)

Through immersion in collected information about a particular subject area, the investigator performing institutional ethnography gets to know her data, develops a research problematic that arises from some tension or disjuncture apparent between textual information that has been gathered, and adopts a standpoint to consider the information from the perspective of a research participant. Through documentation, description, mapping relations and indexing textual information, an investigator can identify and describe the ruling relations that are textually mediating everyday lives.

Using Foucault and Smith Together

Satka and Skehill (2012) explain some of the synergies between Foucault’s and Smith’s thinking, and how the two differing approaches can be applied. While they seem at times

incongruent, Smith and Foucault have produced complementary perspectives that consider discourse, power, and institutions (Satka & Skehill, 2012).

Foucault himself noted in *The Order of Things*, that “Discourse in general, and scientific discourse in particular, is so complex a reality that we not only can, but should, approach it at different levels and with different methods” (Foucault, 1994, p. xiv). He did not wish to limit analysis of discourse to a method following his own. Rather, he felt it important to note that the presentation of his method was not a rejection of other methods of interpreting discourse (1994). Satka and Skehill suggest that rather than limiting oneself to either Foucault’s discourse analysis methodology of archaeology and genealogy—tracing the origins and relationships among discourses “to discover how certain discourses have come to dominate practice”—or Smith’s institutional ethnography—“to find out the regulatory frames which define the organization of institutional processes beyond the local and particular” (2012, p. 224); a third way could combine these two methodologies to the discovery how discourses come to be while also considering how people actively develop the discourses and are influenced by outside factors as they interact with these texts (Satka & Skehill, 2012).

When a textual gaze is connected into the analytic frame of the history of the present, one consequence is the introduction of a new dimension into the investigation. The main focus of the analysis is no more on the discursive level ... but on the level of actual working events and in the text-mediated relations of ruling. (Satka & Skehill, 2012, p. 203)

This is the blended methodology I have adopted to conduct a secondary analysis of interview excerpts with key figures involved in nutrition and obesity research that were presented in the works of Taubes (2007, 2016) and Teizholz (2014), who were researching how nutrition guidelines developed and were constrained by their contexts.

The Role of Power

While considered an inevitable feature of social relations, and located in diffuse zones, it is through understanding the relations between power and knowledge that one gains insight into how certain discourses and ideas come to hold certain 'power' and 'truth' over others at moments in time. (Satka & Skehill, 2012)

Both Smith's and Foucault's focus on power dynamics and the ability of these to shape knowledge production and textual presentations of knowledge make their approaches powerful tools in the study of how obesity has been conceptualized and how obesity knowledge has been popularised. "Foucault offers tools to describe and recognize power relations whereas Smith's work is more concerned with 'mapping' how power works on the level of professional practices" (Satka & Skehill, 2012).

Power is of central importance to the development of neoliberal capitalism, to the development of the scientific discourse around obesity, and to societal attitudes about obesity. Throughout history, concentrations of wealth have correlated with concentrations of power—a society that is unequal with respect to wealth is also unequal with respect to power, as wealth is fuel for coercion. "The ideas of the ruling class are in every epoch the ruling ideas: i.e., the class which is the ruling *material* force of society is at the same time its ruling *intellectual* force" (Marx & Engels, 1998, p. 67).

Accordingly, power dynamics are involved in the production of all knowledge. The rules of right are evident when you consider who is selected to participate in important committees, who is published in peer-reviewed journals, and who makes policy pronouncements. Discourses of truth are produced by those in whom we imbue power.

Foucault considered power to be a productive network, producing knowledge and forming discourse (1980). He also believed that power could produce positive, negative

and neutral outcomes, and while it is considered a productive network, forming knowledge and producing discourse, it could also be considered a restrictive network, suppressing knowledge and restricting discourse. He also argues that power relations impact virtually all aspects of all levels of human interaction, from close kin relations to the broadest global social relations. My interest is how it specifically influences the development of obesity discourse.

Power dynamics were examined when considering how power impacted the development of obesity knowledge. While perhaps not directly observable in the public health texts I considered in discussing the narrative of obesity discourse, power dynamics were intrinsically involved in their creation. More generally, power dynamics are involved in the production of all knowledge.

3.7 Primary and Secondary Sources

The following lists present the primary sources I used to explore the Canadian obesity discourse and the secondary sources I used to understand the development of obesity science and discourse in North America (including Canada).

Table 1. Primary Sources (the Canadian Obesity Discourse)

Type	Reference
Report	Lalonde, M. (1974). <i>A New Perspective on the Health of Canadians: a working document</i> . Queen’s Printer for Canada.
Report	PHAC, & CIHI. (2011). <i>Obesity in Canada: A joint report from the Public Health Agency of Canada and the Canadian Institute for Health Information</i> . Retrieved from http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/oic-oac/assets/pdf/oic-oac-eng.pdf
Report	Public Health Ontario. (2013). <i>Addressing Obesity in Children and Youth: Evidence to Guide Action in Ontario</i> . Toronto: Public Health Ontario.
Report	Senate Standing Committee on Social Affairs, Science and Technology. (2016). <i>Obesity in Canada: A Whole-of-Society Approach for a Healthier Canada</i> . Ottawa: Senate of Canada.

Table 2. Secondary Sources (the Development of Western Obesity Science)

Type	Reference
Book	Taubes, G. (2007). <i>Good Calories, Bad Calories</i> (Kindle Edition). New York: Knopf.
Book	Taubes, G. (2016). <i>The Case Against Sugar</i> (Kindle Edition). Great Britain: Portobello Books.
Book	Teicholz, N. (2014). <i>The Big Fat Surprise: Why Butter, Meat and Cheese Belong in a Healthy Diet</i> (Kindle Edition). Retrieved from http://www.amazon.ca
Book	Yudkin, J. (1972). <i>Sweet and Dangerous</i> . New York: Peter H. Wyden Inc.

3.8 Objective

The primary goal of this analysis was to identify and discuss whether and how neoliberal ideology has developed obesity discourse. The central theme explored was how obesity knowledge was constituted, particularly over the last 40 years in Western society. This project explored the core features of neoliberalism, the development of obesity science, and the production of the obesity epidemic.

3.9 Limitations

The limitations of this analysis included my own bias and presuppositions, which I addressed in my Standpoint section, on page 44.

As Smith asserts,

The sociologist uses background understandings, expectancies, and knowledge to make sense of ‘appearances’, or the actual sequences she observes. They enter in as an unexplicated resource. Not everything upon which the source of the description depends can be explicit in it. The reader herself fills out the text by reading in background knowledge to accomplish its meaningful character. (Smith, 1990, p. 88)

I recognize that my experience is not that experienced by every other obese person who has changed their diet in the ways I have changed my diet. However, there is enough published evidence (Lustig, 2017; Phinney & Volek, 2011; Taubes, 2007, 2016; Teicholz, 2014) of the value and safety of dietary restriction of carbohydrates to address obesity that I feel I am not any more anti-carbohydrate than is merited. Tending towards activism can incite emotions that engender bias in the investigator (Spradley, 1979). I do not believe that I am an overzealous proponent of low carbohydrate diets for everyone, but I readily admit that I believe a low carbohydrate diet can be beneficial to many people.

I also recognize that I may hold other biases about which I am wholly unaware. I hope that my Standpoint section has provided enough context about my situation in relation to my thesis that the reader could critically assess my relationship with my topic. I have attempted to mitigate my own bias by:

- reading extensively about metabolic research, including meta-analyses that appear to support the energy balance hypothesis;
- applying a critical lens to evidence and attempting to validate through triangulation, where possible, each piece of information gathered in the process of this inquiry; and
- discussing my readings with dietitian and nurse colleagues who might challenge my thoughts and offer a different perspective.

3.10 Summary

This chapter presented the method I have applied to my analysis. I began to question my uncritical approach to information interpretation as a result of my exposure to the history of obesity research as I first read in Taubes's *Good Calories, Bad Calories* (2007). After much additional reading and exposure to alternative theories of obesity I realized that, for years, I had tacitly accepted at face value what was presented to me about obesity as established knowledge. This realization led me to incorporate skepticism into my way of understanding the world and apply a critical realist ontology, recognizing that while there is an objective reality that can be known, bias shapes our knowledge about that reality.

My standpoint as both an obese woman and as a public health analyst describe, I believe, the tension between the discourse to which I have been exposed during my career and my

own difficulties applying the message of that discourse to actual weight loss and health maintenance. My assumptions were that my reading of obesity research was accurate—that I was, indeed, identifying a legitimate position of tension in the discourse that merited further study—and that using multiple methods would help me better understand how that discourse developed.

This study considered the relationship between the ideology of neoliberal capitalism and the development of modern discourse on obesity, particularly the discourse related through modern public health texts, using the discourse analysis methodologies developed by Foucault (Foucault, 1972, 1994) and Smith (1987, 1990, 1999, 2005). A central theme of both Foucault and Smith is that of power, and the role of power in shaping discourse. The relationship of the reigning ideology to the exercise and influence of power was of particular interest. These methodologies worked in concert to provide a richer understanding of the development of modern obesity discourse.

The limitations of this analysis are that it is susceptible to bias, which I have attempted to mitigate using multiple methodologies, a breadth of data collection, triangulation and critical assessment, and discussion of my developing perspective with colleagues.

Chapter 4

4 Findings

4.1 The Theory of Obesity

As noted in the literature review, obesity in the West is not new. It was a phenomenon noted to be increasing in England as early as the 18th Century (Gilman, 2017). Gilman also notes that the prevailing discourse about obesity already ascribed blame to the obese person for their corpulence. It was described in a negative light particularly when the obese were also poor, and the obese were publicly shamed (Gilman, 2017). The accepted theory of obesity could be seen to roughly follow this narrative, wherein it is directly associated with the behaviour of the individual. The accepted theory in plain language is presented below.

The Accepted Theory

Currently, the World Health Organization (WHO) states that “[t]he fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended” (World Health Organization, 2015). This is commonly termed the energy balance theory of obesity (Guthman, 2011). WHO elaborates by describing the following fundamental causes of obesity: what is responsible for obesity is “an increased uptake of energy-dense foods that are high in fat; and an increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization” (2015). These are consistently presented in modern obesity discourse.

The Accepted Solution

The WHO solution to increasing obesity rates is for people to make better choices as far as exercise and nutrition, or to enable people to make better choices as far as exercise and nutrition. Specifically, the WHO states:

Overweight and obesity, as well as their related noncommunicable diseases, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, by making the choice of healthier foods and regular physical activity the easiest choice (the choice that is the most accessible, available and affordable), and therefore preventing overweight and obesity.

At the individual level, people can:

- Limit energy intake from total fats and sugars;
- Increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts; and
- Engage in regular physical activity (60 minutes a day for children and 150 minutes spread through the week for adults).

Individual responsibility can only have its full effect where people have access to a healthy lifestyle. Therefore, at the societal level it is important to support individuals in following the recommendations above, through sustained implementation of evidence based and population based policies that make regular physical activity and healthier dietary choices available, affordable and easily accessible to everyone, particularly to the poorest individuals. An example of such a policy is a tax on sugar sweetened beverages.

The food industry can play a significant role in promoting healthy diets by:

- Reducing the fat, sugar and salt content of processed foods;
- Ensuring that healthy and nutritious choices are available and affordable to all consumers;
- Restricting the marketing of foods high in sugars, salt and fats, especially those foods aimed at children and teenagers; and
- Ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace. (World Health Organization, 2015)

As indicated above, WHO's recommendations for healthy living are based on the energy balance theory of obesity. They recommend limiting energy intake, eating more fruits and vegetables, and exercising regularly. The focus is on individual behaviours and food environments. In a study of the medicalization of obesity in the Canadian discourse,

Paradis found that, of the medical solutions discussed in the Canadian literature, “Dieting is the main emphasis” (Paradis, 2016, p. 75), noting also that “individual-level concerns or solutions ... dominate public-health-oriented concerns or solutions” (2016, p. 75).

Alternative discourse such as the metabolic diversity or predisposition links to obesity are absent in the currently accepted theory of and solution to obesity. The unfolding critique of this theory is presented below, along with an alternative theory of obesity.

The Alternative Theory: The Carbohydrate Hypothesis

In an analysis of data from the United States National Health and Nutrition Survey (NHANES), Brown, Sharma, Ardern, Mirdamadi, Mirdamadi and Kuk (2016) found that macronutrient ratios and overall caloric intake did not exhibit a direct relationship with BMI over time. They found that the increase in average BMI that was observed outpaced what would have been expected given the independent variables (energy intake, macronutrient intake, energy expenditure) in the model. This finding is indicative that there are one or more other factors influencing increasing BMI levels besides caloric intake and energy expenditure. Some other factor(s) may be involved in developing obesity.

Gerald Reaven, a Stanford diabetologist, identified a collection of physical symptoms that seemed to cluster together, and described this as Syndrome X in the late 1980s (Reaven, 1988). These include hypertension, insulin resistance, hyperinsulinemia (high insulin levels), coronary artery disease, high triglycerides, and high low density lipoprotein cholesterol (Reaven, 1988). Reaven hypothesized that resistance to insulin-stimulated glucose uptake and hyperinsulinemia may be involved in the etiology of non-insulin-

dependent diabetes mellitus, hypertension, and coronary artery disease. Later, other symptoms would be added to this list, including overweight, high concentrations of C-reactive protein (a marker of chronic inflammation), elevated uric acid (which leads to gout), the predominance of small, dense low density lipoprotein cholesterol, and high levels of fibrinogen—a protein that increases the risk of clot formation (Taubes, 2007). Now referred to as ‘the metabolic syndrome’, this area of research has held increased interest for endocrinologists, cardiologists, rheumatologists, lipidologists and diabetologists. As such, research on carbohydrate metabolism has gained substantial ground in the over the nearly fifty years since another researcher, John Yudkin, first published *Sweet and Dangerous* in 1972—the same year Robert Atkins published his well-known and controversial book, *Dr. Atkins’ Diet Revolution*.

Sugar has been identified as a contributor to obesity, and the mechanism by which sugar may be the main contributor to obesity is through its effect on serum insulin levels (Lustig, 2017; Taubes, 2007, 2016; Yudkin, 1972). Insulin, a hormone that is secreted by the pancreas in response to dietary carbohydrate ingestion, and to a lesser extent, to dietary protein ingestion, is required for cells to metabolize carbohydrate (Phinney & Volek, 2011). Without insulin, carbohydrates cannot enter cells from the bloodstream. The presence of insulin in the bloodstream also facilitates fat storage and prevents the release of fats from fat cells. It can be thought of as a valve controller. Its presence (if the cell is receptive) opens the valve on muscle cells that lets carbohydrate in to be metabolized for energy. It also opens the valve on fat cells (if the cells are receptive) that lets fat in to be stored for use later.

The body can also burn fat for energy. To do this, there must be low levels of insulin in the bloodstream, as insulin prevents fat cells from releasing fat (the valve goes one way in the presence of insulin). Yalow and Berson identified in the mid-1960s that the release of fatty acids [from fat cells] “requires only the negative stimulus of insulin deficiency” (as cited in Taubes, 2011, Chapter 11, para. 38). When serum insulin levels are low enough, fat cells’ ‘valves’ open in the opposite direction and allow fat into the bloodstream. Cells can then burn fat for fuel.

If insulin levels are chronically high, a condition known as insulin resistance can develop, causing insulin levels to remain higher after carbohydrates are consumed. Some people may be predisposed to insulin resistance and the subsequent consequences of diabetes, and there appears to be a genetic component to this which was identified by early researchers in the field, including Yalow and Berson (Taubes, 2007, 2016). Exercise physiologist Tim Noakes believes that “Insulin resistance is the single most important medical condition in the global community—by far, the most important medical condition. Yet,” he notes, “we won’t teach it in our medical schools” (2014). Thus, while physicians are usually the first point of contact for people, they receive little training about the phenomenon of insulin resistance during their medical education.

“Since insulin is a most lipogenic agent, chronic hyperinsulinism would favor the accumulation of body fat” (Taubes, 2016, Chapter 6, para. 36). Insulin resistance will lead to diabetes if insulin levels are chronically high (Kraft, 2008). For a macronutrient that is not a biological requirement for humans (Phinney & Volek, 2011, p. 33), its primacy of place in our diets is questionable. The above explanation of the relationship between

hyperinsulinemia and obesity thus suggests that hyperinsulinemia can lead to obesity rather than the causality being in the other direction.

4.2 The Development of the Obesity Theory

A century and a half ago, it was common knowledge that in order to reduce weight, one should avoid sugar and starchy foods (Taubes, 2007). Dietary fats enjoyed no such vilification until midway through the twentieth century, when Ancel Keys's *Seven Countries Study* provided what many saw as definitive proof that saturated fats *caused* coronary heart disease (Taubes, 2007). While saturated fat began to be seen as a health risk, sugar went from being understood to contribute to human disease to becoming a health-neutral—or even health-beneficial—macronutrient (Taubes, 2007). The causes for this shift are related to economic interests and power dynamics fostered by a neoliberal climate, as well as the fallibility of the science and scientists also subject to power dynamics. The resulting dietary guidelines, upon which Canadians have relied to advise them on a healthy diet, are likely to have contributed to rising obesity rates.

Understanding how they came to be is crucial to understanding the disjuncture between the lived experience of obesity and what the official discourse tells us about obesity.

Traditional Knowledge

Sugar has long been understood to be in certain ways detrimental to human health. The link between sugar and tooth decay in particular has been known since the time of Aristotle (Taubes, 2016). Diabetes was recorded as early as the Ebers papyrus, which dates to about 1550 B.C.E., which “contained descriptions of various diseases, including a polyuric state (frequent urination) resembling diabetes mellitus, as we now know it” (Kraft, 2008, Chapter 3, para. 1). By the fifth to sixth centuries C.E., Sanskrit literature

records that Indian physicians of the time believed there were two forms of diabetes: “one affecting older, fatter people and the other thin people who did not survive long” (Kraft, 2008, Chapter 3, para. 7). Taubes (2016) notes that diabetes was associated with at least ‘gluttony’ and overweight as far back as the sixth century B.C.E., so the links between hunger, corpulence and diabetes were recognized for centuries.

During the same era as the Sanskrit record:

Chinese and Japanese physicians also described this polyuric condition with the sweetness of urine which attracted small animals, including dogs. They also observed that these individuals were prone to develop boils, a condition which even today prevails in those with diabetes. (Kraft, 2008, Chapter 3, para. 7).

And the Arabic physician, Avicenna, described two complications of diabetes: gangrene and erectile dysfunction, “both of which prevail today worldwide in the diagnosed and undiagnosed diabetic population” (Kraft, 2008, Chapter 3, para. 8). Thus, it has long been known that sugar can harm human health.

In the early and middle parts part of the 19th century, it was known that sugar was also fattening:

Farinaceous and vegetable foods are fattening, and saccharine matters especially so.... In sugar-growing countries the negroes [sic.] and cattle employed on the plantations grow remarkably stout while the cane is being gathered and the sugar extracted. During this harvest the saccharine juices are freely consumed; but when the season is over, the superabundant adipose tissue is gradually lost. (Tanner, 1869; quoted in Taubes, 2007, Prologue, para. 1)

Forty-four years before the publication of Tanner’s textbook, another book called *The Physiology of Taste*, written by a French ‘foodie’ lawyer, claimed that the cause of obesity was a particular fondness for starchy foods, and that sugar intake exacerbated the weight promoting effects of those starchy foods (Taubes, 2007). Research by several French and British physicians was beginning to highlight associations between

carbohydrate intake and body fat accumulation, and it would inform a diet ‘fad’ that began in the latter part of the 19th century (Taubes, 2007).

Early Obesity Research

The genesis of early modern obesity research was largely of European origin, and its focus was on the physiologic processes of obesity. This early approach did not examine the social messages that people with obesity were being blamed for their condition, but rather focused on attempting to discern which physiological factors beyond the control of its research subjects were contributing to fat accumulation (Taubes, 2007). Because this research was abandoned following World War II and the findings were predominantly published in German, it was unknown to the non-German Western world (Taubes, 2007). Thus, the theory of the physiological etiology of obesity did not enter the Western discourse until later. This has led to negative repercussions for those who have obesity.

Diet, physiology, endocrinology and obesity were extensively researched in Germany and Austria in the latter part of the 19th and the early part of the 20th century, and a hypothesis known as lipophilia, which observed that hormones seem to affect the accumulation and distribution of fat on bodies, was extensively studied by this scientific community (Taubes, 2007). Coined in 1908 by German internist Gustav von Bergmann, lipophilia referred to the “notion that a defect in fat metabolism causes obesity” (Taubes, 2007, Chapter 21, para. 19). Bergmann noted that there are places on the body that are prone to becoming fatter: “Some regions of the body are more or less lipophilic than others” (Taubes, 2007, Chapter 21, para. 20).

At the time, Julius Bauer, a Viennese physician, wrote in English about the lipophilia hypothesis in the hopes of affecting how obesity was perceived by United States physicians (Taubes, 2007). He noted the familial pattern of obesity—that obesity seemed to be heritable from obese parents—which would point to “genetically determined hormonal and metabolic factors that would bestow a constitutional disposition to put on excessive fat” (Taubes, 2007, Chapter 21, para. 23).

Whatever mechanisms lead some parts of the human body to be more or less lipophilic, Bauer argued, exist to different extents in individuals as well. Those of us who seem constitutionally predisposed to fatten simply have adipose tissue that is generally more lipophilic than that of lean individuals; our adipose tissue may be more apt to store fat or less willing to give it up when the body needs it. And if our adipose tissue is so predisposed to accumulate excessive calories as fat, this will deprive other organs and cells of nutrients, and will lead to excessive hunger or lethargy. (Taubes, 2007, Chapter 21, para. 25).^{11,12}

Bauer had noted in the 1940s that sex hormones seemed to have an impact on the distribution and quantity of fat accumulation—he found that male sex hormones inhibit fat deposition typically observed in females, while female sex hormones determine not where, but how much fat accumulates on the body (Taubes, 2007).

Bauer also suggested that insulin plays a role, by enhancing the deposition of glucose in the adipose tissue, a phenomenon first demonstrated in the 1920s, and by increasing the general affinity of the adipose tissue for accumulating fat. The nervous system plays a role as well, Bauer said: researchers had demonstrated that they could increase the amount of fat in fat deposits by severing the nerve fibers that run to the relevant tissue. (Taubes, 2007, Chapter 21, para. 26)

¹¹ In my Standpoint section, I mentioned that within weeks of modifying my diet, that “I no longer felt tired all the time, and climbing stairs became easy.” Bauer’s hypothesis of the caloric impact of lipophilia—that lipophilic fat can essentially rob other tissues of calories in the right context—I have directly experienced for much of my life. If I overconsume carbohydrate (for me, overconsumption is anything beyond 20 grams of total carbohydrate per day), I become lethargic.

¹² The causality of the lethargy relationship is crucial to consider when noting the association between physical activity levels and obesity.

Thus, research published in German had identified many physiological risk factors for obesity, only few publications (e.g., Bauer) were published on the lipophilia hypothesis in English (Taubes, 2007). Taubes (2007) concludes that most of this research remained undiscovered as it was only published in the German language medical literature, and postwar anti-German sentiments may have contributed to the disappearance of the lipophilia hypothesis. Moreover, the European research community itself was uprooted and dispersed as a result of the wars, disrupting the progression of the research on lipophilia (Taubes, 2007).

The development of obesity hypotheses in the United States was influenced by English language research spearheaded by University of Michigan researcher Louis Newburgh. Newburgh embraced the theory that obese people remain obese because of “various human weaknesses such as overindulgence and ignorance” (Taubes, 2007, Chapter 16, para. 35). He rejected the lipophilia hypothesis and proposed that obesity was the result of a “perverted appetite” and “lessened outflow of energy” (Taubes, 2007, Chapter 16, para. 35).

The obese were responsible for their condition, Newburgh argued, regardless of whether or not their metabolism was somehow retarded. If it was, then the obese were culpable because they were unwilling to rein in their appetites to match their ‘lessened outflow of energy.’ If their metabolisms ran at normal speed, then they were even more culpable (Taubes, 2007, Chapter 16, para. 35)

Newburgh’s embrace of the energy balance hypothesis led him to claim that if obesity ran in families, it was because of familial eating habits and not genetics. He also proposed that if a menopausal woman puts on weight it was because she had more time in her life to overindulge rather than the weight gain resulting from a change in hormonal regulation (Taubes, 2007). This later claim introduces a gendered difference with regard to obesity.

In sum, in the United States obesity research became focussed on the energy balance hypothesis to the exclusion of a robust body of research pointing to other possible causal mechanisms of weight gain, the consequence of which was the responsabilization of the person for their obese state.

The Diet Heart Hypothesis

The impetus for dietary guideline change in the United States (and, by extension, in Canada) came in the mid-20th century from University of Minnesota physiologist, Ancel Keys (Taubes, 2007; Teicholz, 2014). Ancel Keys was an influential personage in the world of nutrition in the mid-20th century (Taubes, 2007; Teicholz, 2014). He was responsible for the development of K-rations used during WWII (Taubes, 2007), which were the survival rations used by troops during short duration missions. “In 1951, [he] became very interested in a new technology that had just effectively come on line, which was a way to measure cholesterol in the blood” (Attia, 2015). His adoption of this new technology may have led him to his focus on cholesterol and those dietary factors which could affect serum cholesterol levels (Taubes, 2007). “By 1952, the University of Minnesota nutritionist Ancel Keys was arguing that high blood levels of cholesterol caused heart disease, and that it was the fat in our diets that drove up cholesterol levels” (Taubes, 2016, Chapter 8, para. 19).

Keys’s hypothesis was based on his repeated observation of a positive correlation between coronary heart disease incidence and total serum cholesterol in United States males. Keys coined it the Diet Heart Hypothesis. He argued that fats in the diet—and saturated fat in particular—are a key risk factor in cardiovascular disease incidence and mortality. The hypothesis gained popularity and primacy in nutritional sciences shortly

after its appearance (Taubes, 2007). It was this foundational work that would shape dietary policy on the inclusion or exclusion of fats from the diet, and it is the role of this work within the context of obesity discourse that requires understanding. The role that government played in defending this research, coupled with the support of industry in shaping it (determining what gets funded), may have led to its robust influence on dietary hypotheses more broadly.

Keys spent most of his career studying the effects of food on physiological outcomes. Nearly twenty years after he initially began to investigate relationships between diet and serum cholesterol, “Coronary Heart Disease in Seven Countries” (Aravanis et al., 1970; Blackburn et al., 1970; Buzina et al., 1970; Djordjevic et al., 1970; Fidanza et al., 1970; Karvonen et al., 1970; Keys, 1970a, 1970b, 1970c, 1970d, 1970e, 1970f, 1970g, 1970h, 1970i, 1970j; Kimura & Keys, 1970; Taylor, Blackburn, et al., 1970; Taylor, Menotti, et al., 1970; vanBuchem, 1970), commonly referred to as the *Seven Countries Study*, was published in the April 1970 supplement of the journal *Circulation*. The study was an international project headed by Keys involving researchers in various countries in different global regions and would provide what nutrition researchers would see as the proof that dietary fats were harmful to health.

The study is often referred to as ‘landmark’ or ‘legendary’ because of its pivotal role in the diet-heart controversy. Keys launched it in 1956, and with \$200,000 yearly support from the [American] Public Health Service, an enormous sum of money then for a single biomedical research project. (Taubes, 2007, Chapter 2, para. 29)

The research studied men around the world, and purported to have produced definitive proof that dietary saturated fat was a critical determinant of cardiovascular disease mortality (Keys, 1970i).

According to Keys, the Seven Countries Study taught us three lessons about diet and heart disease: first, that cholesterol levels predicted heart-disease risk; second, that the amount of saturated fat in the diet predicted cholesterol levels and heart disease (contradicting Keys's earlier insistence that total fat consumption predicted cholesterol levels and heart disease with remarkable accuracy); and, third, a new idea, that monounsaturated fats protected against heart disease. (Taubes, 2007, Chapter 2, para. 31)

The study failed in several ways to account for factors in a complex system, partly because the study heavily weighted the impact of blood lipids to the detriment of the observation other fractional nutrients. Keys analysed the nutrient content of diets, but his focus on types of dietary fats led him to neglect differentiating between types of dietary carbohydrates. While he analysed the saturated fat and poly- and mono-unsaturated fat content (Keys, 1970i), he failed to differentiate among food sugars, which scientists, including Pete Ahrens and John Yudkin, were already pointing to as a potential correlate to coronary heart disease (Taubes, 2007, 2011, 2016; Teicholz, 2014). The *Seven Countries Study* is also an example of selection sex bias as Keys failed to include women in this study. In fact, based on the account of formative obesity science presented by Taubes (2007), much of the science that has contributed to dietary policy—not only that of Keys—was conducted by and on white males.

Moreover, studies of dietary fat intake, including this study, almost always exclusively study people who eat carbohydrate over the threshold value required to maintain fat metabolism versus glucose metabolism (Phinney & Volek, 2011). Given that metabolic processes function differently when the body is metabolising glucose as fuel instead of fat (Phinney & Volek, 2011), the findings regarding the effects of diet could not be generalized to all diets. The study failed to account for the interaction effects of the nutrients studied.

In the section of the study publication where Keys discusses problems encountered in the study, he notes that his hypothesis relating to the observed relationship in his United States research between total cholesterol level and coronary heart disease incidence did not bear out in the international data (1970j), which should have been an indication that there was some mitigating interaction factor that was unaccounted for in his cholesterol hypothesis. The study ignored its own stated limitations by generalizing findings among some samples that were contradicted by findings among other samples. Moreover, the omission of women from the samples went unacknowledged.

In “The Study Program and its Objectives,” Keys cites that there are populations in which coronary heart disease (CHD) is infrequent, including Yemeni refugees and the Bantu-speaking peoples of Central and South Africa. According to Keys, these populations had a “health advantage that was often associated with unacceptable conditions” (1970a).

Because of the “unacceptable conditions” in which these populations lived; they were omitted from the *Seven Countries Study*.

Thus, Keys seems to have ignored findings and further excluded particular groups further indicating additional selection bias or a racial sample bias. As Taubes notes:

[I]t is clear that Keys was wrong about many of his conclusions, particularly regarding the role of fat and cholesterol in heart disease. Nevertheless, his thinking and the strength of his personality— both his competitors and his friends described him as combative and ruthless— would drive nutrition research for the next thirty years. (2016, Chapter 8, para. 19)

Funding sources may also have contributed to biasing this and other American nutrition research. Both Keys at the University of Minnesota and Fred Stare at Harvard’s department of nutrition received funding from the sugar industry for their research (Taubes, 2016). This should have been identified as a conflict of interest. However, the

support of the sugar and processed carbohydrate industries was not common knowledge.

At least in the case of Fred Stare, this funding may have introduced bias in reporting and advocacy:

Michael Jacobson's Center for Science in the Public Interest had publicly exposed the industry connections of Fred Stare ... primarily because Stare had spent much of his career defending industry on food additives, sugar, and other issues. "In the three years after Stare told a Congressional hearing on the nutritional value of cereals that 'breakfast cereals are good foods,'" Jacobson had written, "the Harvard School of Public Health received about \$200,000 from Kellogg, Nabisco, and their related corporate foundations." (Taubes, 2007, Chapter 3, para. 39)

If projects are funded (or not) based on criteria set by the food industry, that has the capacity to shape the narrative that results from the research. In 2015, the *Times* reported that researchers were accepting funding from Coca-Cola to fund the Global Energy Balance Network (GEBN), whose goal was to further the energy balance hypothesis (Taubes, 2016). More recently, researchers at Cambridge University identified that Coca-Cola routinely included termination provisions in research contracts "that allow Coca-Cola to discontinue the studies it funds if results are unfavourable, [which is] in contrast to the assurances it makes on its website about not being able to prevent publication" (Steele et al., 2019, Discussion, para. 4). Accepting funding from corporate interests is an indicator that industry may be exerting power to influence science.

According to Taubes (2007) the American Heart Association (AHA) and National Institutes of Health (NIH) both adopted the Diet Heart Hypothesis almost unquestioningly. That adoption made the hypothesis more difficult to challenge:

After the diet-heart hypothesis became adopted by the AHA and NIH, Keys's bias was institutionalized. These two organizations set the agenda for the field and controlled most of the research dollars, and scientists who didn't want to end up like [George] Mann had to go along with the AHA-NIH agenda. (Teicholz, 2014, p. 68)

The next section presents the challenges to the diet heart hypothesis and the responses from the scientific establishment.

The Danger of Challenging the Establishment

There was a host of scientists in the 1950s, 1960s and 1970s who believed that sugar in particular was causal and central to cardiovascular disease, and many testified to the McGovern committee who were considering the *Seven Countries Study* as evidence to inform new dietary guidelines for Americans in the late 1970s (Taubes, 2007). But funders and funded alike worked to silence opposition to the diet heart hypothesis. Two principal critics of Keys were George Mann and John Yudkin.

George Mann wrote at the end of his career in 1978, a ‘heart Mafia’ had ‘supported the dogma’ and hoarded research funds. ‘For a generation, research on heart disease has been more political than scientific,’ he declared. (Teicholz, 2014, p. 70)

Government agencies, like the NIH, may have intervened to save face; funders probably fought opposition to protect their agendas; and funded researchers did so perhaps both to save face and to protect their agendas, which included secure sources of research funding—sometimes with funders which would have posed a clear conflict of interest. It is worth considering the motives for and the ways in which researchers, agencies, and funders have influenced the body of scientific knowledge on diet and health.

George Mann was among the first researchers to refute Keys’s hypothesis. Mann, who died in 2013 at the age of 95, was an accomplished physician and professor of biochemistry at Harvard University with an impressive body of research, and was also an associate director of the Framingham Heart Study, a decades-long and still ongoing observational study of the development of cardiovascular disease in order to identify risk

factors associated with it (Taubes, 2007). Despite his accomplishments, Mann felt strongly that Keys had hindered and even harmed his career after he challenged Keys' claims and hypothesis (Teicholz, 2014). According to Teicholz, Mann felt personally attacked by Keys (2014).

Citing his research with the Masai, Mann noted that despite their high intake of animal fats, they had low serum cholesterol (Taubes, 2007). Taubes cites a number of trivialising tactics used by Keys to counter Mann's findings, which included the dismissive comment: "The peculiarities of those primitive nomads have no relevance to the diet-cholesterol-CHD [coronary heart disease] relationships in other populations" (2007, Chapter 3, para. 14).

Keys's ability to control the narrative was tremendous. When Nina Teicholz interviewed George Mann, he spoke extensively of Keys, and the power he held over the direction of nutrition research from the 1950s onward.

How could one man's ideas rule the field in such a way? Mann explains, 'You have to understand what a forceful and persuasive person Keys was. He could talk to you for an hour and you would utterly believe everything he said.' (Teicholz, 2014, p. 68)

Keys was not the only power working in opposition to George Mann. When Mann had found a lack of association between dietary fats and serum cholesterol levels in the Framingham study data, the National Institutes of Health (NIH)—the government body controlling the research funding—would not allow Mann to publish the results (Taubes, 2007). This may have been because of Keys's influence at the NIH, or it may have been because they were heavily invested (financially and reputationally) in the diet-heart hypothesis. Thus, the NIH, a United States government agency, supported the research

findings of Keys (in which they had invested large sums of money), simultaneously suppressing the contradictory findings of Mann's research.

Opposing the diet-heart hypothesis proved to be career-damaging, as those in power exerted controls over dissenters. Teicholz describes her last interview with Mann at the age of 90:

Although his memory was not perfect, he seemed to have total recall for the deprivations he perceives himself to have suffered for having opposed Keys. 'It was pretty devastating to my career,' he said. Finding journals that would accept his scientific articles, for instance, grew increasingly difficult, and after he spoke out against the diet-heart hypothesis, he says he was virtually barred from prominent AHA publications such as *Circulation*. Mann also believes that Keys's sizable influence at NIH led to the cancellation of Mann's longtime research grant. "One day," recalls Mann, "the woman who was the study section secretary asked me to step out in the hall. 'Your opposition to Keys is going to cost you your grant,' she said. And she was right." (2014, p. 67)

Contemporaneous with Keys, John Yudkin, a British physiologist and nutritionist, was identifying a connection between sugar consumption and cardiovascular disease during the early 1950s. He believed that sugar was not only the cause of dental decay, but a host of other diseases including Crohn's, ulcers, hiatus hernia, overweight, gallstones, myopia, acne, rheumatism, liver disease, cardiovascular disease, and possibly cancer (Taubes, 2016; Yudkin, 1972).

In 1963, in a seminal article in *The Lancet*, Yudkin took up Cleave's idea that species are adapted—"anatomically, physiologically, and biochemically"—to a particular diet and combination of foods, and that the most dramatic departures from this diet are likely to be the harmful ones. Yudkin proposed the term "diseases of civilization" to describe the cluster of diseases including obesity, diabetes, and heart disease that are common in affluent Western societies and uncommon elsewhere. (Later researchers would prefer the term "Western diseases," to avoid the implication that somehow the only civilized societies are Westernized ones.) He attributed this pattern to the relative amount of sugar consumed. (Taubes, 2016, Chapter 8, para. 42)

He published several books on weight loss from the late 1950s through the 1980s, based on his finding that sugar consumption was associated with obesity. In 1972, he published a mass-market book based on his and other researchers' work studying the physiological effects of sugar consumption called *Pure, White and Deadly*. Taubes (2007) argues that like Mann, his career suffered as a result of his opposition to Keys, despite Keys's own research corroborating Yudkin's findings:

Keys himself went after Yudkin in a letter that he first distributed widely to investigators in 1970, before it was published in the journal *Atherosclerosis*. Keys called Yudkin's arguments for the role of sugar in heart disease 'tendentious' and his evidence 'flimsy indeed' he treated Yudkin as a figure of ridicule. What made Keys's critique so ironic, though, is that virtually every argument that he invoked to criticize Yudkin's hypothesis had been used in the past as criticism of his own. Most were equally valid for both, and spoke to the flaws in the epidemiologic evidence—the use of international cause-of-death statistics and food consumption data or dietary-recall surveys to draw conclusions about cause and effect—rather than to the actual validity of the hypotheses. Keys's case against Yudkin came to rest almost entirely on his invocation of the *Seven Countries Study* as support for his hypothesis. In fact, the *Seven Countries Study* had been one of the very few studies that had measured sugar consumption in populations, and sugar indeed turned out to predict heart disease rates as well as saturated fat did. (Taubes, 2007, Chapter 6, para. 62)

Taubes concludes that researchers were intimidated into not challenging the diet heart hypothesis for fear of ridicule and losing (or not being able to secure) funding.

By the late 1970s, to study the potentially deleterious effects of sugar in the diet, says Sheldon Reiser—who did just that at the U.S. Department of Agriculture's Carbohydrate Nutrition Laboratory in Beltsville Maryland—and to talk about it publicly, was to endanger your reputation. 'Yudkin was so discredited,' says Reiser; 'he was ridiculed in a way. And anybody else who said something bad about sucrose, they'd say, 'He's just like Yudkin.' (Taubes, 2007, Chapter 6, para. 63)

Ultimately, the refutation of challenges to the diet heart hypothesis came directly from researchers heavily funded by corporate industrial interests and the national bodies (NIH) who were invested financially and reputationally. Together, the power exercised by those with power—the presumptive authorities on the subject; and the power exercised by

funding agencies which set research agendas and impeded publication of findings; directly affected the development of the discourse on nutrition, and by extension the discourse on obesity.

The Rise of Exercise as a Weight Loss Strategy

The science on exercise and weight loss is also fraught with issues. Exercise is commonly understood to be a useful intervention for weight loss. The fitness industry is built around the idea that vigorous exercise leads to fat loss and more normative bodies. The best evidence, though, suggests that “Exercise is a wellness tool. It is not a weight loss tool” (Phinney & Volek, 2011, p. 242). How then did we arrive at prescribing exercise as a weight loss tool?

In the mid-20th century research, it became apparent that exercise was not a panacea for weight loss. According to Taubes, “Until the 1960s, clinical investigators routinely pointed out that moderate exercise would lead only to insignificant increases in energy expenditure, and these could be easily matched by slight and comparatively effortless changes in diet” (2007, Chapter 15, para. 25). It was also understood that exercise has a direct effect on appetite, so that the body ramps up hunger in response to exertion (2007). Astonishingly, among obese people, regular exercise can actually *lower* the basal metabolism by as much as 15%, resulting in less weight loss than expected—and in some cases more weight loss with bed rest than exercise (Phinney & Volek, 2011; Taubes, 2007). This relationship between exercise and reduced weight loss was also commonly recognized prior to the 1960s. Given what the science was revealing about exercise, the reasons for exercise recommendations seem to have more to do with ideology than with science (Gard & Wright, 2005).

In the 1950s, Harvard nutritionist Jean Mayer became an influential advocate for exercise as a treatment for obesity. He “established himself as *the* leading authority on obesity in the United States ... based more on the romance of his background [he had fought in the French resistance during WWII] than his expertise as a clinical scientist” (Taubes, 2007, Chapter 15, para. 27). It is possible that Mayer seized upon an argument that people were ready to adopt—that the overweight simply did not have the ‘health ethic’ that their non-lazy, non-fat counterparts undoubtedly must have possessed. Unlike many of his predecessors in the field of obesity research, he himself never actually treated the obese, and he based his hypotheses largely of observational studies, which can only demonstrate correlation, rather than on evidence from clinical trials, which could demonstrate causation (Taubes, 2007).

“By the end of the decade, he was getting credit from the *New York Times* for having ‘debunked’ the ‘popular theories,’ argued by clinicians and their obese patients, that exercise had little influence on weight” (Taubes, 2007, Chapter 15, para. 29). Mayer’s research should have led him to reject his own hypothesis. When he studied infant birth weight or even genetically obese mice, rather than seeing genetic predisposition to obesity in heavy babies and mice that were genetically predisposed to obesity, he believed he was observing a predisposition to laziness (Taubes, 2007). Mayer’s initial theories found easy acceptance in the public discourse such that before long, the public believed that obese people were so because they underexercised—they were lazy (Taubes, 2007).

The Role of Corporate Interests

The sugar industry was influential in the development of the discourse on carbohydrates and human nutrition, partly through research funding and partly through marketing. This influence, which began in the late 1920s continues to the present day.

Established in 1928, the Sugar Institute was created “to promote a new code of ethics that would get everyone in the industry working together” and “to promote directly to the public the joys and benefits of eating and drinking sugar” (Taubes, 2016, Chapter 7, para. 2). The Sugar Institute was dissolved in 1936, after it was successfully sued for price fixing by the United States Department of Justice (Taubes, 2016). Prior to its dissolution, it promoted sugar as a health food through regular print advertisement (Taubes, 2016).

The sugar industry formed a new non-profit organization (Sugar Research Foundation) to promote sugar in the wake of ‘anti-sugar propaganda’ messaging indicating that sugar was a non-essential nutrient in the early 20th Century (Taubes, 2016). The Sugar Research Foundation which was later renamed the Sugar Association Inc., distributed millions of dollars in research funding to Princeton, Harvard, MIT and the California Institute of Technology for the study of nutrition, carbohydrate chemistry, and metabolism (Taubes, 2016). They were also major funders of Ancel Keys and Fred Stare (Taubes, 2016). As well, they mounted public campaigns to promote research that promoted sugar (i.e., their profits) and discredited research that identified sugar as a threat to public health (Kearns et al., 2016).

When non-caloric sweeteners began to be used with more frequency, companies like Coca-Cola and Pepsi began to produce artificially sweetened products to capture some of

the market share (Taubes, 2016). The American Sugar Refining Company, who were determined to sell sugar, “launched an intensive advertising campaign ... stressing how important it was for children, in particular, to benefit from the energy contained in pure sugar. Three years later, the Sugar Association took over the effort” (Taubes, 2016, Chapter 7, para. 25).

Eventually, the Sugar Association’s focus turned to American government regulators, whom they began to influence in order to have the artificial sweeteners cyclamate and saccharin lose their GRAS (generally recognized as safe) status. By funding organizations to research the safety of artificial sweeteners, they eventually were successful in bringing about the barring of cyclamates and saccharine. They funded studies using animal models that exposed the animals to several hundred times levels that any human could conceivably ingest (Taubes, 2016). Moreover, these studies did not compare the safety of artificial sweeteners (or rather their potential harms) against the safety or potential harms of sugar (Taubes, 2016). The Sugar Association succeeded in having cyclamates banned.

Similarly, in Canada, researchers reported that large quantities of saccharin were carcinogenic in animal models which resulted in Canada banning saccharin from foods, but not cyclamates. A campaign attempted to have the US ban saccharin but was unsuccessful. Today the United States Food and Drug Administration no longer bans either substance, as it is generally recognized now that animal models fed sweetener at an order of magnitude of hundreds of times of what exposure would be in humans are not good representations of risk to humans (Taubes, 2016). However, the doubt in artificial sweeteners has been successfully nurtured by the messaging and advocacy of the sugar

industry and the scientists it funded, raising enough doubt in people's minds to keep alive the idea that sugar is safer than artificial sweeteners (Taubes, 2016).

4.3 Diet and Dietary Guidelines

While the relative recentness of grain products and concentrated sugars in the human diet is frequently discussed in anthropology texts, it is mostly absent from conventional obesity literature (Taubes, 2002). Carbohydrate-rich, *energy-rich*, grains were an essential food for increasingly larger populations (Kottak, 1996). The transition from hunting and gathering through horticulture to intensive agriculture is typically understood to have occurred in some regions no more than 12,500 years ago, while in some regions hunting and gathering, horticulture, and pastoralism persist to this day as primary means of subsistence (Kottak, 1996). In the context of human evolution and adaptation, the shift to grain-based agriculture is very recent.

More recent still are dietary guidelines in Canada recommending higher quantities of grains as a proportion of foods consumed. Canada's 1961 Food Guide said simply that bread and cereals were "good to eat", recommending only that three meals be taken each day (Health Canada, 2007). By 1977, Canada's Food Guide recommended serving bread and cereals in the range of three to five servings a day (Health Canada, 2007). After its update in 1992, the Food Guide recommended an increase to five to 12 servings of grain products per day (Health Canada, 2007). In the 2007 Food Guide, serving recommendations were specified for sex and age groups (Health Canada, 2007). Grain serving recommendations in this guide were revised to a range between six and eight per day for teenagers, adults, and seniors; and females in age groups 14 and over had an

upper limit of grain products one serving lower than males in the same age groups (teenagers, adults and seniors).

4.4 The Impact of the Food System

The McGovern Committee was “a bipartisan nonlegislative committee ... formed in 1968 with a mandate to wipe out malnutrition in America” (Taubes, 2007, Chapter 3, para. 13). There were a number international scientists (including John Yudkin, Aharon Cohen, Peter Bennett, Walter Mertz, Peter Cleave, and Carol Berdanier) who provided testimony to the McGovern committee hearings implicating sugar as a probable contributor to cardiovascular disease and refuting the notion that blood cholesterol had any relationship to cardiovascular disease (Taubes, 2007, 2011, 2016; Teicholz, 2014). These objections were based on the absence of strong evidence for restricting fats in the diet (Taubes, 2002, 2007). These protestations went unheeded, and the McGovern committee pressed forward with the dietary recommendations that formed the basis of the diet for much of the last forty years.

In Canada, a committee was struck in 1974 to inform dietary recommendations of the Ministry of National Health and Welfare. The *Report of the Committee on Diet and Cardiovascular Disease*, presented a review of the evidence between diet and cardiovascular disease in Canada (Mustard et al., 1976). The resultant recommendations from this committee included taking in 40% to 50% of daily caloric requirements as carbohydrate; reducing salt intake, cholesterol intake, and total calories; and controlling the amount and type of fats, including reducing saturated fat intake (Mustard et al., 1976). The dietary guidelines that resulted will be shown to have increased recommended carbohydrate intake relative to previous guidelines.

The dietary transition to carbohydrates and the increasing quantities and refinements of these dietary carbohydrates is probably the most dramatic alteration in human diets in the past two million years (Taubes, 2007). Initially, agriculture across cultures brought an increase in carbohydrate content into humans' everyday diet in the form of complex carbohydrates from grains and tubers. In the Middle East, cereals such as barley and oats were primary agricultural products, in the Americas, maize was a primary agricultural product, and in the Far East rice was the starchy agricultural staple. Sugar is relatively new as a human dietary energy source. In the last 150 years, average consumption of sugar in the form of sucrose and high-fructose corn syrup increased from less than 10-20 to 150 pounds per person a year in the United States today (Taubes, 2007).

The recommendation by the American dietary guidelines in the late 1970s to reduce total fat and saturated fat intake opened the door to products containing refined carbohydrates and sugar to make up the balance of energy requirements (Lustig, 2017; Taubes, 2007, 2016). These same recommendations were made in the Canadian guidelines. The guidelines "told people to eat less fat, but it didn't say anything about sugar" (Lustig, 2017, p. 88). Thus, industry whose interest is sales and profit, filled this new niche with products. The contents of these new products aligned with the notion that lowering fat is healthy. Sugar an addictive non-food that presents nearly boundless opportunity for profiteering to large processed food producers (Lustig, 2017). Sugar rapidly became ubiquitous in the Western diet, through funding research, product development and marketing.

In a Neoliberal climate:

All agents acting in the market are generally presumed to have access to the same information. There are presumed to be no asymmetries of power or of information that interfere with the capacity of individuals to make rational economic decisions in their own interests. (Harvey, 2005, p. 66)

If people are not properly informed, they cannot make rational economic choices, and herein lies the problem with the neoliberal ideal. When the market, within an ideological frame, influences the production of ‘knowledge’ to produce only that which portrays its products in a favourable way and suppresses or silences dissent, ‘consumers’ cannot make well-informed decisions. The sugar industry did just such a thing over much of the second half of the twentieth century (and continues to), as it spends marketing budget promoting that it can satisfy your sugary wants, and allocates funding to projects that frame those sugary wants as something that you can and should satisfy. The sugar industry has worked hard to bring its product to market, and keep it there, despite the evidence of the dangers it posed to human health.

In the mid-1970s, even researchers hired as consultants by the sugar industry were telling it to do whatever experiments and clinical trials were necessary— to spend whatever money was necessary— to establish definitively whether or not sugar causes diabetes and raises the risk of heart disease. Instead, the sugar industry launched its public-relations campaign to defend sugar and attack its critics. Because this campaign succeeded, the research necessary to establish whether the dire implications were correct, or to exonerate sugar, as the case might be, was delayed for at least twenty years. It’s still being done, albeit only in fits and starts. The sugar industry’s campaign, however, could only succeed with the help of a nutrition-research community that had largely come to believe that dietary fat — saturated fat in particular— was the most likely cause of our chronic diseases. Understanding that development is crucial. (Taubes, 2016, Chapter 8, para. 15)

The erosion of the quality of obesity and nutrition research cannot be blamed solely on the covert and coercive efforts of the sugar and processed food industries and independent researchers.

Universities, the venues in which obesity research is frequently conducted and where nutrition education occurs, have also been influenced by neoliberal capitalism and ideology. The commodification of knowledge for the purposes of capital accumulation (e.g., tuition buys learning) has meant that pedagogy has changed, such that educators are devalued—exploited to maximize labour for wages—and the institutional spaces of the university have become commercialized over time (King-White et al., 2013). The loss of public (government) support for higher education, and increased competition for students means universities function more as a business than a state-funded institution. These processes mean universities are more concerned about survival (i.e., profits) and less about pedagogy. This has been “condemned as the rise of the ‘corporate university’” (King-White et al., 2013). As a result, there is increased competition within and among universities, and this competition has become one of the main drivers of scientific research:

Why do so many scientists want to sequence the human genome? The answer is that they want long-term employment, they want to direct multiple staff working on the project, they want the profile—Nobel prizes, honorary degrees—they want the teaching appointments, they want the lavish laboratory facilities. They want the economic and status benefits that come with being involved in such high profile work. (Lewontin, 1991, pp. 51–52)

This paints a somewhat cynical but likely accurate picture of at least a segment of scientific research, which is frequently based on time-limited funding and is an example of how neoliberalism fosters competition for scant resources. Food industries have spent vast amounts and gone to great lengths to influence the nutrition landscape (Taubes, 2007, 2016; Teicholz, 2014), and university funding is among the strategies used.

4.5 The Canadian Discourse on Obesity

The modern characterization of obesity is a result of interpretations of previously extant discourse within obesity science, and reflects decades, perhaps centuries, of contextual discourse. How Canadian public health documents have reproduced the obesity discourse will be discussed here.

The public health discourse on obesity, as it is presented, largely relies on the energy balance hypothesis. I explored four primary sources of official Ontario and Canada government discourse that either focused on obesity or addressed obesity in the larger public health context. Only in the two most recent documents does the hormonal/metabolic theory of obesity appear, and in all four documents the lifestyle choices theory of obesity appears. The four primary source documents, in reverse chronological order of publication, are discussed here.

The first document is the federal Senate Standing Committee on Social Affairs, Science and Technology (2016) report: *Obesity in Canada: A Whole-of-Society Approach for a Healthier Canada*. The Senate report involved months of consultation on diet and obesity in Canada. Its stated purpose was:

to report on the increasing incidence of obesity in Canada: causes, consequences, and the way forward, including but not limited to:

- a) food consumption trends;
- b) specific elements of diet;
- c) the processed food industry;
- d) lifestyle;
- e) provincial and federal initiatives; and
- f) international best practices. (Senate Standing Committee on Social Affairs, Science and Technology, 2016, p. iii)

The report presented the senate committee's findings following twenty-two meetings, which included testimony from the following:

diet experts, nutrition researchers, food retailers and manufacturers, critics of the food industry, healthy living researchers and advocates, medical experts, health charities' representatives, advocates of the social determinants of health, and the Assembly of First Nations Health Canada, the Public Health Agency of Canada, the Canadian Institutes of Health Research, and Statistics Canada officials. (Senate Standing Committee on Social Affairs, Science and Technology, 2016, p. 1)

It offered twenty-one specific recommendations to the government to address the issue of increased obesity rates.

The second document is *Obesity in Canada: A joint report from the Public Health Agency of Canada and the Canadian Institute of Health Information* (PHAC & CIHI, 2011), a research report released in 2011 that included “new data analyses on the prevalence, determinants and impacts of obesity, as well as a summary of recent research reviewing what we know about obesity in Canada” (PHAC & CIHI, 2011). The stated intent of this report was to inform public health efforts to understand and address obesity.

The third document is *The Chief Public Health Officer's Report on the State of Public Health in Canada*, a population health assessment report released in 2013 that was a response to an evidence request from the Ontario Ministry of Health and Long-Term Care to “create an evidence primer to serve as a foundational reference document to inform the work of the panel” convened “to inform and advise the Ministry on the best way to achieve its childhood obesity reduction target [of 20% over five years]” (Public Health Ontario, 2013, p. 1).

The fourth document is *A New Perspective on the Health of Canadians*, released in 1974. This report, while not focused specifically on obesity, is a broad health status report and the “first modern government document in the Western world to acknowledge that our

emphasis upon a biomedical health care system is wrong” (Hancock, 1985). It marked the point at which a broader preventive strategy was introduced to public health efforts in Canada, and its approach to health promotion became a foundational pillar of public health guidance in the following decades.

Obesity as Catastrophe

While the language of crisis is much less prevalent in the Canadian literature than the American literature on obesity (Paradis, 2016), in three of these four Canadian reports, rising obesity rates are referred to as a cause for alarm; a “crisis” by the Senate Standing Committee on Social Affairs, Science and Technology (2016, pp. iv, 20), an “epidemic” by the PHAC and CIHI (2011, p. 17), and a “serious ... problem” by Public Health Ontario (2013, pp. 1, 3).

In the context of these reports, the language of crisis, epidemic and problem also appear alongside conceptualizations of burden related to the human cost (mortality and/or morbidity associated with obesity), the economic costs (morbidity, mortality, and health care), and other indirect costs (lost productivity, years of life lost, health-adjusted or disability-adjusted life lost). For example, this quote from the Senate report exemplifies what was also presented in the other two reports cited above:

It has been estimated that obesity cost the Canadian economy approximately \$4.6 billion in 2008, up \$735 million or about 19% from 3.9 billion in 2000. This is a conservative estimate, as it is limited to those costs associated with the eight chronic diseases most consistently linked to obesity. Another study using a comparable methodology and looking at 18 chronic diseases estimated the cost to be even higher, at close to \$7.1 billion. (PHAC & CIHI, 2011, p. 2)

Obesity, in these documents, is problematized as a cause for alarm and a source of increasing health costs and associated public financial burden.

The Metabolic Theory of Obesity

The report of the Senate Standing Committee on Social Affairs, Science and Technology (2016) heard from a broad spectrum of people involved in the science of diet and obesity, marketing and production of food, physical activity specialists, writers, practitioners, and research specialists. This is the only document of the four considered in which the metabolic theory of obesity is highlighted in significant detail and pertaining to adult (not only childhood) obesity, and that may be because the process was more democratic than that used to produce the other three documents. By democratic, I refer to the consultation process in data collection and the incorporation of narratives beyond those enshrined in the official discourse of the etiology of obesity. By allowing not only those imbued with the power to speak the official discourse to testify, they have allowed alternative theories of obesity to be presented and enshrined in this now-official document. Hearings included testimony from a number of people as individuals supporting the carbohydrate hypothesis of obesity, such as Dr. Robert Lustig, Dr. Yoni Freedhoff, and Nina Teicholz; as well as from organizations typically outside such scientific discussions like the Assembly of First Nations and Citizens for Public Justice (Senate Standing Committee on Social Affairs, Science and Technology, 2016). Thus the Senate report also acknowledges “the increasing diagnoses of metabolic syndrome” (2016, p. 17) as well as the theory testified by several witnesses “that the primary cause of metabolic syndrome is sugar as well as refined carbohydrates” (2016, p. 17).

However, the way that other testimony was presented continued to problematize metabolic differences as differences of behaviour rather than metabolism:

Overweight and obese women are three times more likely to exceed the recommended weight gain guidelines during pregnancy than are healthy weight

women, leading to the delivery of larger babies. Committee members were told that larger infants are more likely than healthy weight babies to become overweight children, who grow into overweight and obese adolescents. The cycle continues when these overweight young women become pregnant. The problem is further compounded when women do not get down to a healthy weight before the next pregnancy. (2016, p. 18)

The preceding passage uses language that implies the inability of a woman to conform to a healthism model of behaviour. Women who “do not get down to a healthy weight” between pregnancies are explained to be putting their babies at risk of obesity. The choice of language signifies the problem as related to women’s behaviour, when perhaps a mechanism of causality is not being considered. Were there a genetic predisposition to obesity—to putting on a lot of weight in response to hormonal mechanisms during pregnancy—perhaps the hormonal predisposition to weight gain is genetic and inevitable rather than evidence of a woman’s inadequate performance of health.

The metabolic theory of obesity also appears in the Public Health Ontario (2013) report about childhood obesity, and includes the same narrative about “metabolic programming” during pregnancy (2013, pp. 14, 17). The contribution of genetics is considered in this report, and the interaction of genetics with environmental factors appears as a brief discussion point in this document. In total, three paragraphs of this 127-page document address the metabolic theory of obesity, and it is possible that it is only discussed here because children are seen to have less agency in their own obesity than are adults.

This report is even self-contradictory. It notes that while “people who are severely obese have a greater risk of premature mortality than those in the normal weight and overweight ranges” (PHAC & CIHI, 2011, p. 2), the relationship between obesity and poor health outcomes is “complex” (PHAC & CIHI, 2011, p. 2). Within the same public health

document the authors state that the inability to infer causality is a limitation of obesity science, then paradoxically continue to make such claims relating to the energy balance hypothesis of obesity (PHAC & CIHI, 2011).

The Lifestyle Choices Theory of Obesity

The lifestyle choices theory of obesity is present in all four selected documents. Lifestyle choice was implicated nearly everywhere that obesity is discussed, and even infiltrates the metabolic theory discussions as noted above. It was evident in the earliest of these four documents, and it is from there that I will start and describe the lifestyle choices theory.

The flagship document heralding ‘modern’ public health policy in Canada was called *A New Perspective on the Health of Canadians* (1974)—also known as the Lalonde Report for then-Minister of National Health and Welfare, Marc Lalonde. The report is noteworthy for championing a preventive approach to improving population health, rather than relying on medical intervention after ill health set in. This report was written at a time when obesity knowledge was relatively recently enshrined and neoliberalism as a political norm was still largely in a nascent stage (the late 1970s).

The Lalonde report justifies preventive public health action in specific areas where it was supposed it could make the most impact. Obesity is first mentioned on page 15 of the Lalonde Report as a contributor to cardiovascular disease, which was (and remains) a leading cause of death for those aged 35 to 70. “While the causes of circulatory diseases are various, there is little doubt that obesity, smoking, stress, lack of exercise and high-fat diets, in combination, make a dominant contribution.” It continues, “All of these are due to environmental conditions and self-imposed risks” (Lalonde, 1974, p. 15). On page 17,

obesity is again attributed to poor behaviour such as overeating and lack of exercise. These fall into the 'lifestyle' realm of contributors to ill health, referring to behaviours thought to be the choice of the individual and thus self-governed.

At the time, this approach was novel. The Lalonde report identifies what it frames as challenges to improving public health:

One of the ironies of obtaining and analysing health data is that it is so difficult to act upon the conclusions reached. Taking coronary-artery disease as an example, one finds that it is the major killer and the major cause of hospital days. Contributing factors are well known and include genetic inheritance, the relative absence of estrogenic hormones in men, smoking, obesity, high-fat diets, high serum cholesterol, lack of exercise and stress as well as such morbid conditions as atherosclerosis, diabetes and high blood pressure. Yet, when one looks for programs aimed at reducing the prevalence of coronary-artery disease through an abatement of known contributing factors, one finds that they are weak or non-existent. (Lalonde, 1974, p. 24)

The aim of the Lalonde report was to promote Canadian public health strategies founded on the principle of prevention. through the eighties and nineties. Where once prevention was non-existent, it is now much of the work that local public health agencies perform across Canada.

In 1984 and 1989, Ontario public health established a document in two phases it called the *Mandatory Health Programs and Services Guidelines*, which directed provincial public health service delivery. It was revised in 1997. While obesity is not mentioned in the Guidelines, they repeatedly refer to promoting 'Healthy Weights', which at the time were described as a BMI between 20 to 27 among adults aged 20 to 64 (Ontario Ministry of Health and Long-term Care, 1997, p. 13). The *Ontario Public Health Standards*, the modern guidance documents that direct public health programming in Ontario, cite

obesity as a “risk factor for chronic disease” that public health agencies are directed to address (Ontario Ministry of Health and Long-term Care, 2008, 2017, 2018).

In the *Mandatory Health Programs and Services Guidelines* and the *Ontario Public Health Standards*, in every instance that healthy weights is mentioned, it is mentioned alongside healthy eating and regular physical activity, clearly indicating that public health considers healthy weight to be a direct result of healthy eating and regular physical activity. These reports also reflect the reality that obesity is a core indicator of public health in Ontario, and has been for more than a decade (APHEO, 2018), an indication that public health epidemiologists feel it is important enough to measure. The lifestyle choices theory of obesity, which ignores the broader contexts in which obesity develops, may be so because of the “main stream [sic.] and medicalized hegemonic discourse in health care that focuses on the belief that person’s health is predominantly under the control of the individual” (Aston et al., 2012). This responsabilization of the individual in the lifestyle choices theory of obesity is directly linked to the focus on individual responsibility that is a central feature of neoliberal ideology. Moreover, the development of the science that led to it was influenced by the mode of governance of neoliberalism (whereby the market influences government decision-making).

Chapter 5

5 Discussion

The history of how we have spoken about obesity and the context of how that discourse developed have contributed to modern obesity discourse and the obesity epidemic itself. Gard and Wright assert that those writing about obesity “often provide potted histories of fatness, reminding us that Hippocrates, the ancient Greek physician, and Galen, the first century anatomist, both saw fatness as a sickness and prescribed dietary restraint and physical exercise” (2005, p. 70). The obesity discourse is influenced by and influences [neo]liberal notions of freedom of choice and personal responsibility, and this moral account of obesity is present in modern public health texts. In effect, responsabilizing people for their own overweight and obesity biased the science and public understanding, which in turn allowed neoliberal forms of policy and governance to create the conditions that allowed obesity rates to climb very quickly in Canada over just forty years.

Neoliberalism is associated with the development of obesity discourse and with rising obesity rates. The governance, ideology and policies of neoliberalism serve the ruling apparatus. Its ideology is so pervasive that we “seldom even recognise it as an ideology” (Monbiot, 2016). It emphasizes competition and individualism and can be understood as a narrative of equality of opportunity that justifies the social order.

Our dietary guidelines are part of neoliberalism’s policy package, and economic actors have also been allowed and invited to directly influence policy, including dietary policy. Policy is shaped by powerful economic interests, and this has impacted the food—and ultimately, the obesity—landscape.

5.1 The Development of the Obesity Theory

The accepted theory of obesity is the energy balance hypothesis (i.e., energy intake must be ‘balanced’ with an equivalent energy expenditure). The solution to the problem of obesity when it is framed as an energy imbalance is for people to make better lifestyle choices, as weight maintenance is framed as an individual responsibility. Individual responsibility—a feature of neoliberal ideology—is itself problematic, because not everyone is empowered with the money or social status to control the relevant aspects of their behaviour, if indeed such behavioural modification were even a viable solution to the problem of obesity.

The supposed relationship between obesity and exercise, which is recommended as a solution to obesity, is also problematic. In the mid-20th century, research showed that moderate exercise resulted in minimal increases in energy expenditure (Taubes, 2007). It was also generally understood that exercise stimulated appetite (Taubes, 2007). Despite this, the idea that exercise was an effective weight loss tool would become enshrined in the obesity discourse. Much like the ‘energy balance hypothesis’ overtaking the ‘metabolic hypothesis’, the dominant narrative on exercise as an appetite stimulant (and not effective for weight loss) would be overtaken by the exercise as a weight loss tool narrative.

Understanding why the energy balance theory has become the prevailing theory of obesity, and how this was influenced by political ideology, was the aim of this analysis. Both Foucault and Smith stress the importance of discourse in the formation and dissemination of knowledge (Foucault, 1972, p. 4; Smith, 1987, 1990, 1999, 2005). If

science does not properly account for its context, the ‘building on’ of scientific hypothesis can occur on a foundation that may not be well-established with evidence.

Bias

Bias in the physiological and biological sciences is impacting (and has impacted) health status and health outcomes. Race and sex have influenced both who studies and who is studied. Most of the nutrition research in the early 20th century in the West was conducted by white men on white men. The foundational study leading to the lower fat and higher carbohydrate diet recommendations we currently have, the *Seven Countries Study*, failed to include women in its sample and selectively sampled populations based on arguably ethnocentric and first-world exceptionalism assumptions. This sex and race bias may have been a simple matter of ignorance of different physiological attributes across races or between sexes, but it has resulted in a scientific understanding that it works for everyone, yet it is even questionable that it works for white men. Thus, it is questionable whether it works for anyone.

The methodology of many nutrition studies also contributes to the creation of biased findings. Research design, particularly in multivariable modeling, can gravely impact whether and what findings are observed. Problem closure also contributes to which questions are asked, as there are assumptions that some questions have already been conclusively answered or are appropriately addressed by an existing solution. The research can become tautological, in that the assumed causes and consequences of the problem frame subsequent study of the problem’s causes and consequences. As well, since most obesity knowledge is based on observational epidemiological studies,

causation cannot be justifiably inferred, although it is frequently inferred by researchers presenting their findings (Cofield et al., 2010).

Universities, too, have played a role in the generation and propagation of misinformation to an unknowing public. Commodifying information has meant that universities have become sites of intense competition for resources, including corporate funding, and this has potentially biased some of the research undertaken (Steele et al., 2019).

The Marginalization of an Alternative Theory

An alternative theory, known as the metabolic theory of obesity, or the carbohydrate hypothesis, has been present in the literature since the early 1900s (Taubes, 2007) but largely ignored by mainstream science. This theory recently re-entered the discourse, where it seems only to feature in the public health discourse if it must be included as it was testified to in a government committee, or as it pertains to childhood obesity—where the agency for obesity/overweight isn't as easily ascribed to a child. The far more prevalent theory in the discourse is the lifestyle choices theory of obesity, which understands obesity to be under the control of the individual whose overeating and/or physical activity are seen to have contributed directly to their weight status.

A century ago, carbohydrates were understood to be fattening, while saturated fat was at worst seen to be neutral. As well, the early physiology research conducted in German pre WWII observed that hormones had a relationship with fat accumulation (Taubes, 2007). These knowledge points would have to be discounted in order to promote the dietary guidelines adopted in the late 1970s in the US and Canada and to expect there to be no consequences of weight gain for individuals.

The dietary guideline changes in the US and Canada were made largely based on the results of the *Seven Countries Study*, which purported a clear relationship between dietary saturated fat (as a contributor to total serum cholesterol) and heart disease incidence. This research was fiercely defended by the scientists conducting it and the government agency that funded it. The principal researcher, Ancel Keys, had devoted decades to the study of the relationship between diet and serum cholesterol, and had a professional interest in his hypothesis being valid. The AHA and NIH, who had adopted this theory, were also invested in it, financially and reputationally (Teicholz, 2014).

Influential scientists and corporate and state interests worked in tandem to marginalize or silence critics. Scientists who challenged Keys's theory would find themselves publicly ridiculed or blacklisted by science journals and funding agencies (Teicholz, 2014). Both George Mann and John Yudkin faced intense criticism when they challenged Keys's theory (Teicholz, 2014; Yudkin, 1972). Yudkin in particular highlighted the impact that increasing sugars (which was invariably occurring with the new dietary guidelines) would have on bodies (he had written books on slimming that advised restricting carbohydrates), yet the relationship between carbohydrates and obesity would continue to be ignored despite his and several other accomplished physician researchers' efforts (Taubes, 2007).

The sugar industry itself is to blame for part of the muddying of the obesity discourse. The industry, whose goals were to market and sell sugar, twice created marketing associations to promote its product to the public and to combat anti-sugar messaging. The reputational damage to artificial sweeteners that it was able to accomplish may have been enough for sugar to recapture market share.

Although many provided testimony to the McGovern committee that was advising on the dietary guidelines for Americans, the guidelines would ultimately severely restrict fat recommendations and therefore broaden carbohydrate recommendations for caloric input, resulting in the dietary guidelines in the United States and Canada that we have had since the early 1980s.

5.2 Dietary Guidelines and the Rise of Obesity

Canadian dietary guidelines (Health Canada, 2007), based on the accepted theory of obesity, sharply increased the recommended servings of carbohydrates, including refined carbohydrates, through the 1980s and 1990s. Obesity rates rose sharply from the time that guidelines increased, though they had been rising in the US from the 1960s (and presumably here as well). The changes to our diet were directly related to scientific recommendations that were influenced through overt and covert means (the direct influence of powerful personalities in the field and the NIH as funders, and the covert influence of the sugar industry as funders). There was also influence from industry, and scientific researchers and organizations in the development of the dietary guidelines, and there was coercive influence from industry through marketing campaigns.

It is important to remember that the transition to a carbohydrate-rich diet is very recent in evolutionary terms, and in the West there has been a large increase in sugar consumption in a very short time. Over the last 150 years in particular, average consumption of sugar in the United States has increased tenfold or more (Taubes, 2007). The restriction of dietary fat has a direct relationship with this increase in sugar consumption in America. The food industry created many “low fat” foods in response to the restrictions on fats, and

sugar has enormous profit potential so it was in companies' interest to do so (Lustig, 2017).

This created a food environment in which 'healthy' foods were low-fat and high-carbohydrate. The sugar industry, motivated by profit, worked (and continues to work) hard to communicate the energy balance hypothesis, and to encourage consumption of dietary sugars. If the dietary recommendations were flawed, and the public was not properly informed about the risks and benefits of increasing dietary carbohydrate content, a properly informed public making rational decisions about what foods to eat would be impossible.

5.3 Framing Obesity

Ultimately, the current characterization of obesity is the result of the development of the obesity narrative. Obesity discourse reflects and reinforces neoliberal rationalities of ruling and self-governance (Guthman, 2009; Norman et al., 2016). Because of the misunderstanding of the etiology of obesity and the means to address it, the obese person has become the symbolic embodiment of overindulgence and laziness. This narrative is reinforced every time it is repeated, and is readily embraced by the health insurance industry (LeBesco, 2011), which is prepared to profit from the failures of the morally unworthy fat premium payer.

Canadian public health obesity discourse, like that of other countries, has incorporated an environmental theory of obesity (Gard & Wright, 2005; Guthman, 2011; Kirkland, 2011), which at first glance appears to externalize the blame for obesity, but when critically considered is really no different than the energy balance hypothesis as it presupposes that

the risk factors for obesity are still overeating and under-exercising. The environmental account at its root views obesity as a problem of modernity—easy access to food and fewer opportunities for physical activity. Strategies to address obesity from this perspective are like those provided from the energy balance hypothesis perspective, and center on education and health promotion activities. This continues to devolve responsibility to the individual rather than the society. It also idealizes a past that never existed.

The energy balance theory of obesity, when carefully considered, seems dissatisfactory (Guthman, 2011; Taubes, 2007; Teicholz, 2014). It postulates that weight gain is simply the result of taking in more calories than are expended, and this is insufficient to explain why, if the relationship is this simple, fewer people are not obese (Taubes, 2007). This is a theory that has been wrongly borrowed from physics to explain rising levels of obesity (Taubes, 2007). It suffers from causal reductionism, where an assumption of a single cause is made when there are actually multiple causes of a phenomenon (Bennett, 2013). ‘Calories in = calories out’ is a gross oversimplification of the complexity of human metabolism (Guthman, 2011; Phinney & Volek, 2011; Taubes, 2007). Nevertheless, it has been accepted “as ‘truth’ over alternative narratives[, which] reflects on how the ‘energy-balance model’ has been privileged within Western biomedicine” (Norman et al., 2016, p. 345).

As individuals are blamed for their contribution to their own obesity, the discourse continues the theme of blame by extending the obese person’s culpability for their corpulence to their culpability for the costs to the health care system as a result of it. The catastrophizing narrative present in obesity discourse is frequently presented with the

human cost and the economic cost of morbidity and mortality. The obese are understood to be the cause of their (and by extension, taxpayers') problems.

The way that science in general, and nutrition science in particular, have each developed over the 20th century has led us to blaming the obese for their obesity (Taubes, 2007). The fallibility of science has become clear to me as a result of my literature review for this project. It appears hazardous to established hypotheses in science. Both Mann and Yudkin serve as examples of what can happen to those who challenge established hypothesis in the face of those with power. Because theories are left largely unchallenged, they become hegemonic scientific ideologies.

Neoliberal ideology strongly emphasizes the role of the individual and presupposes that all people have equal opportunity to succeed or fail. This pertains particularly to economic prosperity, but the notion of success being the result of hard work rather than immutable predisposing factors extends in a neoliberal world into all aspects of life, not just economic life—as Tsatsanis (2009) writes, “At the most basic level, neoliberal arguments rest upon a firm conceptual and normative distinction between equality of opportunity and equality of outcome”. The narrative of ‘fat failure,’ while not new, is amplified in an ideological environment where individual responsibility is front-of-mind and differences of opportunity are ignored or even rhetorically negated.

Self-governance is a central narrative of the obesity discourse and a central principle of neoliberalism. In a neoliberal climate, people are rendered responsible for their own personal states, including their health and physical phenotypes. The self-governance narrative in the obesity discourse follows from narrative of self-efficacy that features

prominently in neoliberal reality. It is born of a fundamental misunderstanding of the etiology of obesity, which, itself may be tainted by liberal ideology. This responsabilization of the obese person also reflects that normative undesirability of the fat body, which has come to be associated with poverty (rather than abundance, as it was prior to industrialization).

It is this ideology that leads people to offer such comments as “you must have really wanted it” or “it must have been such hard work” in response to my own weight loss, which reinforce the falsehood that weight loss is simply a matter of willpower. For me, weight loss was a matter of having the proper information, not willpower.

Chapter 6

6 Conclusion

In this thesis I posited that the increased obesity rates we see today are a result of the impact of neoliberal ideology on the [mis]understanding of the etiology of obesity, coupled with the impacts that neoliberal policy and governance have had on food consumption by facilitating the production and marketing of obesity-producing foods to the public.

I explored how neoliberal capitalism has influenced perceptions of obesity. It certainly influenced dietary practices in ways that produced increased levels of fatness, and it created and disseminated a narrative about body fatness that characterizes fatness as an undesirable moral failure, assigning individuals the responsibility for this framed moral failing. Several factors allowed it to achieve this influence. The power and money to influence the development of scientific research played a central role in affecting both rates of and perception of obesity. Market primacy played a role in the influencing rates of obesity. Rational choice theory has also played a role in influencing perceptions of obesity.

Neoliberal assumptions and policies have negatively affected bodies as well as how society treats those whose bodies do not conform to the idealized form. These biases have influenced and impeded the development of scientific knowledge about the process of obesity, and continue to feature prevalently in official state discourse on proposed solutions to increased obesity rates and on the nature of obesity—which is framed as

economically burdensome and unhealthy. The above analysis indicates that neoliberalism has distorted both the food system and the common perceptions of the nature of obesity.

The recent Canadian public health discourse very closely reflects the progression of obesity discourse in the scientific literature. In the 1970s, the discourse reflected the individual responsabilization narrative, and the idea that people who were obese were so because they overate and underexercised. While there was a later shift in public health discourse toward an environmental account of obesity, it is also founded on the spurious arguments that obesity is caused by overeating and under-exercising. This is an untenable conceptualization of the mechanisms underpinning obesity for most people who experience obesity, because it again relies on the self-governance narrative that responsabilizes the obese body (Guthman, 2011; Kirkland, 2011).

Recently, we have seen the introduction of the metabolic theory of obesity to the official public health discourse. This holds some promise, as ascribing agency to the part of the fat person in their own fatness—perhaps demedicalizing a medical condition or at least phenotypic predisposition—unfairly demonizes them as wasteful, slothful, drains on society.

A government stance on something can be a legitimizing force, for better or for worse. As indicated in the findings, our public health system in the form of guidelines adopts the notion that obesity is a condition caused by gluttony and sloth. Public health continues to predominantly characterize obesity as a problem of personal responsibility. Despite the introduction of the concept of obesogenic environments in the late 1990s, public health

recommendations continue to repeat: eat less and exercise more. However, “Fitness is primarily an inherited trait” (Phinney & Volek, 2011, p. 242).

We need to recognize that bodies have physiological variation in metabolism that mean that science cannot simply extrapolate science conducted on white males to all people.

On a positive note, Canada recently revised its food guide (Health Canada, 2019) to more generally focus on nutrients from whole foods rather than from *specific* foods (it is less prescriptive). Focusing on whole foods is a step in the right direction, but what would help support overweight and obese people would be routinely incorporating fasting insulin testing into routine panels in addition to fasting glucose as a means to detect insulin resistant individuals (Kraft, 2008). Moreover, teaching medical students about the importance of insulin resistance in the development of metabolic syndrome could help physicians identify and treat patients with metabolically mediated obesity earlier.

The recent report of the *Senate Standing Committee on Social Affairs, Science and Technology* (2016) which followed a broad public consultation on ways to address obesity, is also an encouraging sign. Including people with obesity in discussions that may lead to policy is another step that, if intentional and respectful, could help to broaden the discourse on obesity and expose obesity experts to those who are experts at living with obesity. Further, limiting the opportunities for industry lobbying groups to contribute to these kinds of discussions might help reduce forms of bias by those who might reasonably be expected to profit from systems that disadvantage those with obesity.

In conclusion, it is imperative to read research critically and to consider the grave importance of studying representative samples when generalizing to the population. We

must also consider the effects that systematic ideological bias may have on the ways in which ‘knowledge’ is developed. Finally, we must never forget that the reigning ideologies of an era infiltrate all aspects of discourse—meaning that in order to properly understand a scientific hypothesis, we must understand the social environment in which it developed.

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