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ADVICE, INFLUENCE, AND INDEPENDENCE: ADOLESCENT NUTRITIONAL
PRACTICES AND OUTCOMES IN BELFAST, NORTHERN IRELAND

DISSERTATION

A dissertation submitted in partial fulfillment of the
Requirements for the degree of Doctor of Philosophy in the
College of Arts and Science at the University of Kentucky

By

Jennifer Williams

Lexington, Kentucky

Director: Dr. Deborah Crooks, Professor of Anthropology

Lexington, Kentucky

2013

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ABSTRACT OF DISSERTATION

ADVICE, INFLUENCE, AND INDEPENDENCE: ADOLESCENT NUTRITIONAL PRACTICES AND OUTCOMES IN BELFAST, NORTHERN IRELAND

The goal of this dissertation is to discuss relationships between the sociocultural environment and nutritional status outcomes in an urban industrialized city with high rates of poverty. The purpose is to highlight the complex web of factors shaping nutritional status outcomes and move beyond cause and effect approaches to nutrition in an environment where obesity is a central nutritional concern. To accomplish this goal, I examine a range of factors that relate to adolescent nutritional practices and nutritional status outcomes in a sample population of adolescents living in Belfast, Northern Ireland. I discuss connections between social locations such as age, gender, geographic area, and socioeconomic status. I also highlight the range of nutritional status outcomes observed in the sample population, while examining broader social, political, and economic aspects of the lives of adolescents that differentially shape nutrition-related experiences in the city. Finally, I demonstrate that adolescents occupy a complex social location in which autonomy, advice, and influence from sociocultural and political-economic factors shape their diet and exercise practices and nutritional status outcomes in multi-faceted, and at times unexpected, ways. In doing so, I emphasize the benefits of a localized, rather than a globalized approach to nutritional concerns such as obesity.

KEYWORDS: Biocultural anthropology; Adolescent nutritional status; Belfast; Obesity; Sociocultural Influences on Nutrition

Jennifer Williams

(Student's Signature)

7/10/2013

ADVICE, INFLUENCE, AND INDEPENDENCE: ADOLESCENT NUTRITIONAL
PRACTICES AND OUTCOMES IN BELFAST, NORTHERN IRELAND

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Chapter 1: Advice, Influence, and Independence: Adolescent Nutritional Practices and Outcomes in Belfast, Northern Ireland

Rising levels of adolescent obesity have warranted a great deal of concern over the last several decades throughout the world; particularly in industrialized, urban centers in North America and Western Europe. In the United Kingdom, this concern has led to the scrutiny of adolescent diet and physical activity levels as nutritional practices are believed to be directly linked to nutritional status outcomes. However, biocultural anthropologists have found that nutritional status outcomes are shaped by multiple, interacting factors, such as ethnicity, age, gender, race, and income, that complicate cause and effect approaches to adolescent nutrition (Moffat and Galloway, 2007; Gordon-Larsen, 2006). Furthermore, post-structural theorists have surmised that choices and actions are the result of, not only social location and proximity to resources, but also influential sociocultural relationships that make some choices seem more appealing than others (Bourdieu, 1998; Wolf, 1999).

Nutritional choices are further complicated among adolescents, who occupy a unique social location in which they assert autonomy and independence amid guidance from adults (James, 2001; Bluebond-Langner, 2001). Adolescents get nutritional knowledge from schools, media sources, and public health campaigns and also receive advice on diet and exercise from their parents and friends. Yet, teenagers also have the opportunity to assert their own independence on their diet and exercise decisions when they buy foods for themselves at shops or restaurants, or when they decline to eat certain foods offered to them at school or in their homes.. Biocultural anthropologists have recognized children's autonomy in nutritional choices and have posited that young people

play a direct role in shaping their nutritional status outcomes (Lee and Brewis, 2009; Brewis and Garten, 2004), but the extent of this role is not yet fully understood.

This dissertation analyzes the multiple factors that shape adolescent nutrition in Belfast, Northern Ireland. Belfast is a suitable place to situate such an inquiry on adolescent nutrition because there has been a strong push in Northern Ireland to improve child and adolescent nutrition. These efforts include immersing children in school and community environments that promote healthy choices through education and the elimination of unhealthy foods. However, biocultural anthropologists have begun to critique such interventionist minded approaches to nutrition improvement arguing that such approaches are often inefficient, culturally inappropriate, and overlook structural barriers to healthy eating; thus belying the complexity of the processes shaping nutritional status outcomes (Brewis, 2010, Moffat, 2010). To capture this complexity, I situate this dissertation within the biocultural literature that examines the web of factors shaping nutritional status outcomes in a population of adolescents living amid a so-called “obesity epidemic” in an urban, industrialized environment in Northern Ireland.

A biocultural perspective promotes a healthy skepticism of current representations of the global epidemic of obesity that occurs amid global dietary and exercise changes (Moffat, 2010; Offer, 2012). This skepticism is based on case studies, which demonstrate that nutritional status outcomes are highly variable since they are contingent upon local sociocultural and physical environments (Dufour, 2006; Pike, 20010; Crooks, 2007). Such cautious approaches to obesity also counter the notion that it is easy to predict nutritional status outcomes in urban, industrialized places, which are often characterized as adverse to nutritional status outcomes (Moffat and Galloway, 2007).

Despite the breadth of studies on childhood nutritional status, there is a limited appreciation for the political, economic, and sociocultural influences that shape the choices that young people make, and the web of relationships between choices and nutritional status outcomes. This dissertation seeks to understand, if not untangle, the web of factors that collectively shape the nutritional status of young people. In doing so, I evaluate the role that advice, influences, and independence play in shaping adolescent nutritional practices and outcomes to paint a holistic picture of factors shaping nutritional status for a population of urban teenagers in Belfast, Northern Ireland.

This holistic picture has become a necessity amidst a growing body of so-called “obesogenic” literature that seeks to resolve rising rates of obesity by identifying and eliminating factors that cause obesity. However, the research I have conducted in Belfast demonstrates that urban environments house a wide array of factors that shape nutritional practices and nutritional status outcomes in complex ways. This dissertation will stand as a critique of the obesogenic literature because: 1) the nutritional practices of the sample population do not always correlate directly with nutritional status outcomes, thus undermining the utility of body size as a proxy measure for diet and exercise; and 2) the obesogenic literature reduces “environments” down to contained systems in which single factors can be isolated and eliminated to resolve existing nutritional issues. However, the nutritional environment in Belfast is seen, in this dissertation, as an open, constantly changing system that shapes perspectives, practices, and outcomes in myriad ways. This complexity undermines the myth that nutritional problems can be solved merely by changing some of the ways that young people interact with or access food and exercise.

Research Location and Sample Population:

Belfast is a city that is largely associated with political conflict and segregation. For much of the Twentieth Century Catholic Nationalists, Protestant Loyalists, and the British government have been at odds over who should hold political control of Northern Ireland. Nationalists have traditionally hoped to break away from British control while Loyalists sought to maintain direct political affiliation with the United Kingdom and the British Parliament in Westminster (Holland, 1999). Disputes between Nationalist and Loyalist groups reached a fever pitch many times during the history of English imperialism in Ireland. The 1960s through the 1990s saw a period of paramilitary violence in the two communities that resulted in British military occupation and Nationalist armed resistance to this occupation (Hennessey, 2007). This conflict, known as The Troubles, was greatly disrupted by the signing of the Good Friday Agreement in 1998, in which Loyalist and Nationalist paramilitary groups agreed to a cease-fire upon the removal of British troops from Northern Ireland. The cease fire also set in place a power-sharing government in which funds, granted from the Westminster Parliament, are divvied between locally elected ministers in Northern Ireland who are responsible for the day-to-day running of the country (Holland, 1999). While some Nationalists feel that this is not yet enough and continue to push against British rule in their country, the violence has largely died down and the cease-fire is respected by both sides with only intermittent episodes of violence punctuating continuing efforts at peace.

The cease-fire, although tenuous, has also promoted cross-community programs seeking to distribute resources fairly to all constituents and to build trust and friendship between former enemies (Tausch *et al*, 2006). While great strides have been made, there

are still significant divides in the city today that follow ethnic and socioeconomic lines (Byrne *et al*, 2001). Today, Belfast is divided into four distinct geographic areas called East, West, North, and South Belfast respectively. South and East Belfast contain the wealthiest areas of town despite pockets of poverty in each area. East Belfast remains a Protestant and Loyalist stronghold and is home to the now infamous church of Ian Paisley, who fought so fiercely for an unshakable, unrelenting Protestant front during the most recent Troubles. However, there are small pockets of Catholic communities in East Belfast that are characterized by income deprivation and have been the target of paramilitary raids after the ceasefire, one of which occurred while I was living in Belfast in 2011. South Belfast is by far the wealthiest area of town and encompasses the campus of Queens University of Belfast. The wealthy communities of South Belfast include a growing number of Catholics among the traditional Protestant occupants and constitute the least ethnically divided area of town (Russell, 2005).

North and West Belfast remain the most economically deprived areas of the city and have great divides between Protestant and Catholic communities. These divides are reinforced through the presence of the Union Jack or the Irish Tri-color flags and numerous murals depicting military heroes, beloved monarchs, or paramilitary paraphernalia. It is virtually impossible, while making your way through the winding roads filled with row houses in North and West Belfast, to be unaware of whether you are in a Catholic or Protestant neighborhood. The close proximity and deep divisions between the communities can still lead to conflict, though there have also been remarkable feats of cross community collaboration (Leonard, 2004). North Belfast still sees yearly riots in opposition to Protestant marches through Catholic areas and tensions

in these areas remains high, while incomes remain low. In West Belfast, the partitions are less volatile although still divisive. Residents in the Protestant Shankill live only a few streets away from residents of Catholic West Belfast and yet there is little movement or cross-over between these two communities (*ibid*). A geographical familiarity with Belfast shows that divides continue to exist despite great strides for peace and reconciliation in the city over the past decade, especially in North and West Belfast.

While the history of Belfast has been tumultuous and, at times, violent, there is a persistent concern among the people I met in Belfast and the academic literature in which the history of the city is described that the Troubles are given too central a role in Northern Irish culture (Feldman, 1991; Knishkowsky, 2013). Some have even go so far to say that the culture of Northern Ireland, particularly youth culture, has become saturated with stories from the Troubles that do not accurately reflect the daily lives of people in the city (Gillespie, 1992). In this dissertation, I discuss the history of the Troubles as it relates to the lives of young people today. Specifically, many of the services aimed at young people arose during the Troubles to keep young people off the streets and away from paramilitary activities. However, the adolescents described throughout this dissertation have grown up in an environment that lacks the daily violence and tension that was so prevalent in the 1980s and early 1990s. While the political history and conflict still loom in Northern Ireland, to overstate this history would be to deny all of the political, social, and cultural changes that have occurred since the Troubles. Namely, young people are no longer as vulnerable to recruitment from paramilitaries, which play a much less central, and even have a contentious role in community life today. Throughout this dissertation, I make historical connections that describe the roots of youth social

services, while also acknowledging that the roots of many of these services might not reflect the lives of young people today. Therefore, a break with the political history of the country is purposeful in this dissertation since my goal is to demonstrate that youth today have unique experiences that require a reassessment of the structure of youth services and views of youth culture in Belfast.

However, I do not wish to deny that the history of Belfast has shaped the lives of young people living in Belfast in 2010 and 2011. Today, these economic and social divisions manifest themselves within the sociopolitical divisions that are still lingering long after the cease fire. There is very little cross-community education in the city, with so-called integrated schools educating less than 1% of the current population of students (Smith, 2001). Since the majority of the research in this dissertation was conducted in schools, I focus on students living in Catholic communities since these continue to house the most severe poverty in the country (Horgan, 2009). The sample population for the survey and questionnaire upon which much of this research is based consists of secondary school students between the ages of eleven and seventeen that attend Meánscoil Béal Feirste¹, which is located in the Catholic section of West Belfast. Although this school is largely, if not exclusively, attended by the Catholic community, Meánscoil Béal Feirste is somewhat of an anomaly in secondary schooling in Northern Ireland. It is not officially registered as a Catholic school because it is an Irish language school. In fact it is the only Irish medium secondary school in all of the North of Ireland. The Irish focus in Meánscoil Béal Feirste appeals to students from Nationalist/Catholic

¹ Note: The name of the school, all organizations, and people that participated in this research have been changed to meet anonymity requirements set by the University of Kentucky IRB

communities all over Belfast and, thereby, hosts a broad range of geographic and socioeconomic constituencies.

Meánscoil Béal Feirste is also unique compared to the majority of secondary schools in Northern Ireland because it accepts both male and female students, unlike many schools that only cater to one gender. Therefore, the school provides a rare secondary educational environment in which nutritional practices, influences, and outcomes can be understood for a wide range of ages, genders, socioeconomic strata, and geographic areas of Catholic Belfast. The bulk of this dissertation is based on an anthropometric survey and a questionnaire, conducted with the school children of Meánscoil Béal Feirste. The analysis of the survey and questionnaire provides information on the nutritional practices and perspectives (questionnaire) and nutritional status outcomes (anthropometric survey) of a sample of Catholic adolescents in Belfast.

While Meánscoil Béal Feirste provides a broad glimpse of adolescent nutrition in the city, conducting research in the school made it challenging to get a truly localized understanding of nutrition because students come from all areas of Belfast. Therefore, I conducted an in-depth case-study of one area of Belfast, Catholic West Belfast, to facilitate a more detailed understanding of adolescent interactions with their political-economic surroundings. In this case study, I examine youth culture and youth resource provision at the community level, to identify the resources that are available to young people and the ways that adolescents negotiate these resources.

The case study is largely based on ethnographic research in two youth clubs and several youth resource organizations in West Belfast. I spent several months observing and volunteering in youth clubs to learn about the role of these organizations in the

community. Many of the facility-based activities in youth clubs are designed for younger, primary-aged students, but several teenagers serve as volunteers to help oversee nightly programs for the children. The clubs are open every evening from around 6:00 and remain open until 9:30 or 10:00 pm. Children pay a pound each time they attend the club and are able to play indoor football, watch television, play video games or snooker (similar to pool), do arts and crafts, or join dance and drama groups. Teenaged volunteers also have access to workshops that teach them various health related topics (drinking, drug-use, sexual health) and also to numerous sporting events and leagues. The clubs also provide certificate programs that help teens build credits towards a career as youth workers, physical educators, child care specialists, or even manicurists.

However, not all teenagers in West Belfast attend youth club on a regular basis, if ever. Youth outreach is a prominent concern among youth resource providers in the community who worry that young people who attend youth clubs are not necessarily the ones who need resources the most. Detached youth workers are hired by many organizations to go out and interact with teenagers who spend their evenings and weekends hanging out with friends on street corners. These teens are a concern for youth workers since they often partake in drinking and drug use, and detached youth workers are meant to help them find programs and activities that keep them safe and busy. Detached youth workers walk around the community in pairs getting to know young people and asking them if they can put together programs that might interest them. Sometimes young people are interested, sometimes they are not, but this allows teens to build a rapport with youth workers even when they have no ties to youth facilities or organizations. Detached youth workers develop programs that teach teens of the dangers

of drinking or drug-use, that work to facilitate cross-community relationships with Protestant teenagers, or serve as a source of fun and entertainment by taking trips to the movies or sometimes as far as Scotland. During my fieldwork, I spent time with detached youth workers learning about program development and goals by working with the Teen Involvement Project.

While working with these community organizations, I gained an appreciation for the problems facing young people in the community and came to understand that nutrition is not always a top priority of programs that seek to reduce drinking, drug use, suicide, violence, and criminal activities. However, some programs do include a nutritional education component and they also offer young people numerous opportunities for physical activities. This, along with health programs at Meánscoil Béal Feirste, makes up a variety of healthy eating and activity opportunities for young people in Belfast.

Nutrition and Health in Belfast:

Nutrition programs, like those in West Belfast, have a long-standing history in Northern Ireland. Starting in the mid-Nineteenth century, public health campaigns drawing from Laissez Faire ideals of the time began focusing on individual lifestyles, diminishing the role of political causes of poor health (Bardon, 1992). The emphasis on lifestyle, and particularly nutritional, aspects of disease in Northern Ireland has remained a crucial part of public health messages during the rise of heart disease and cancer in the 20th and 21st centuries (Boreham and Riddoch, 2001; Boreham and others, 1999; Macintosh and others, 2006). Rates of chronic disease are very high in Northern Ireland, which, in the 1970s and 80s, had the highest rate of ischemic heart disease (IHD)

in any industrialized country in the world (Barker and others, 1990). This has led to a number of public health campaigns focused on heart health including the Change of Heart Campaign in 1986, which identified diet and lifestyle as major causes of heart disease in the country. This emphasis on diet and exercise, “[has drawn] attention to the need for changes in diet, as did the strategy proposed by the Northern Ireland Coronary Prevention Group, which recommended a community-based program for the prevention of IHD in Northern Ireland” (Barker, ME, 1990: 9).

Therefore, the interest in diet and activity has inspired many subsequent diet and exercise surveys and community based programs in Northern Ireland. In these surveys, government agencies collect vital statistic as well as diet, exercise, and anthropometric data. These studies found that diets are poor and people exercise very little, leading to a push for nutrition-based program funding in Northern Ireland. However, these efforts have been critiqued for asking individuals to change their behaviors while failing to provide the means necessary for change. For example, Carolyn Mason *et al* (1999) argue that the care system was set up in Northern Ireland in such a way that health care providers have long offered advice to patients to which patients had no means of adhering:

Individuals...received a range of disparate and isolated health messages from health professionals, which did not appear to be supported by practical action...physical exercise was encouraged but there were insufficient recreational facilities to make this possible for most people, and no accessible leisure centers...It has been demonstrated that health education, combined with practical help can be effective for low income groups in particular” (77)

These authors call for more resources and more practical advice for communities that are known to lack necessary health resources. In an effort to provide better resources, the local government of Belfast has pushed for funding for recreational facilities and nutrition education programs. Government schemes have also improved school meals

and nutrition education throughout the city. The city council in Belfast has put much of their assets into creating recreational facilities, many of which are explicitly aimed at young people in the form of youth clubs and youth sports leagues. However, the motivations for these facilities has stemmed more from a, perhaps naïve, belief that keeping young people busy will keep them out of trouble , making health a secondary motivation of the city council in many respects (Gillespie, 1992).

Today, most health markers in Northern Ireland are improved over previous decades. Liz McWhirter (McWhirter, 2002) explains the triumphs and concerns for the future of health in the country:

In reviewing the changes in health status of the Northern Ireland population over the last few decades...people are living longer, with reductions to the leading causes of death (such as heart disease, stroke, and many cancers). The Northern Ireland infant mortality rate, which were the worst in the UK, are now among the best, and people are taller and straighter than ever before and with better and more teeth. However, there are a few downsides to this story. These include: decreased levels of physical activity; increased obesity; increasing incidences of diabetes and asthma; and, perhaps higher levels of (more minor) mental ill health (18)

In the early 21st century, therefore, chronic disease rates in Northern Ireland are finally slowing down. Many of the health improvements are attributed to an over-all improvement in the quality of life that has taken place since the cease-fire in 1998. Yet, the sociopolitical consequences of the conflict have taken precedent over health outcomes, especially among the low-income communities that have been hit hardest by fallout from the political conflict (McWhirter, 2004; Smyth, 2001). While strides have been made, there are still numerous health disparities in the city that need to be addressed since chronic heart disease and cancer rates are still very high, especially in low-income, Catholic communities (Birrell, 2010).

Furthermore, the maintenance of a lifestyle approach to public health has overshadowed attention towards the political and social inequities in which health disparities

are rooted (Moore, 1996; Smyth, 2001). Today, many health programs focus on changing behaviors since eradicating poverty is such an onerous task. This leads to a do-it-yourself approach to healthcare and places the burden and the blame for poor health in the hands of individuals. Such policy and programs have been critiqued by anthropologists for failing to connect to the lives that people are living on a daily basis (Brewis, 2010; Panter-Brick and Fuentes, 2008). This fits with a biocultural critique of obesity prevention programs that are not in tune with the daily lives of individuals and perpetuate empty and potentially damaging nutrition solutions.

Rather than reify personal responsibility approaches to nutrition, in this dissertation, I examine the relationships between nutritional practices and nutritional status outcomes within a web of influential factors in both the sociocultural and physical environment in Belfast. My central goal is to understand the relationships between nutritional practices, influences, and status outcomes for adolescents in Belfast to demonstrate the complexity behind biocultural, nutritional outcomes. Toward that goal, I utilize the following five aims to examine the role of independence, advice, and influence in shaping nutritional status outcomes for adolescents in Belfast:

A1: Assess the nutritional practices and outcomes of a sample population of adolescents in Belfast and determine the role that gender, age, SES, and geography play in mediating nutritional practices and outcomes.

A2. Assess the strength that sociocultural factors (family, friends, teachers, television, community workers, and church leaders) have on influencing adolescent nutrition. In doing so, I identify sociocultural factors that are associated with healthy or unhealthy diet and exercise practices and nutritional status outcomes.

A3. Examine the role that adolescents play in making independent nutrition decisions and determine whether independent choices and behaviors coincide with higher rates of obesity.

A4. Describe the relationships that adolescents have with nutritional knowledge and understand how this relationship shapes nutritional practices and nutritional status outcomes. Determine whether nutritional knowledge in the community varies from home, schools, community organizations, friends, and the media. Then I will determine whether different messages coincide with varying nutritional practices and outcomes.

A5. Use a case study in West Belfast to examine interactions between adolescents and their physical and sociocultural environments to identify opportunities for food consumption (restaurants, take-aways, home, school, and shops) and spaces for physical activity (gyms, parks, sports fields). I will then assess how the use of these resources is negotiated through the mediums of youth culture and youth resource provision in the city.

To accomplish these five research aims, I employ a biocultural perspective based on political economic and adaptability theories. A biocultural perspective is rooted in the notion that biology and culture are linked via a complex web of environmental and genetic factors and that biological outcomes do not result from simple cause and effect relationships (Goodman and Leatherman, 1998). In short, a biocultural perspective has shaped the central argument in this dissertation, which posits that adolescent nutritional status outcomes in Belfast are embedded in a web of sociocultural influences in the form of advice, influence, and adolescent independence. A biocultural perspective moves beyond a restrictive notion of “risk” when dealing with biomedical categories like obesity (Panter-Brick and Fuentes, 2008) and promotes a critical and holistic assessment of the factors shaping adolescent nutritional outcomes in Belfast. The biocultural perspective along with its relationship to political economic and adaptability theories is discussed in detail in chapter two of this dissertation. Chapter three lays out the methodological and analytical techniques that allow me to accomplish the five aims of this dissertation.

In chapter four, nutritional status, diet and exercise data are assessed to determine whether there is over-consumption of unhealthy foods and a dearth of exercise leading to higher rates of obesity among the sample population of adolescents from Belfast (*Aim 1*).

After I make these connections between diet, exercise, and nutritional status outcomes, I parse out the sociocultural factors that have the strongest relationship to nutritional practices and outcomes in the sample population (*Aim 2*). Chapter four, thus, lays the groundwork for the rest of the dissertation by establishing the nutritional practices and outcomes of the sample population and identifies factors that play a significant role in shaping nutrition in the community. This chapter, thus, introduces the complex web of factors that shape nutrition in Belfast.

In chapter five, I discuss the role that adolescents play in shaping their own nutritional practices and outcomes in Belfast (*Aim 3*). Analyses of questionnaire, interview, and participant observation data reveal that adolescents in the city do, in fact, play a central role in making choices about their diet and exercise practices and that, in some cases, their independence is directly linked to higher body fat. However, in chapter six I demonstrate that parents, friends, and media outlets (and to a lesser degree teachers and community workers) all offer advice and influence that shapes adolescent nutritional practices and outcomes in significant ways, both healthy and unhealthy. Chapter six also includes an in-depth discussion of sources of nutritional knowledge to show the range of nutritional ideals to which young people are exposed (*Aim 4*). The goal of these chapters is to complicate existing notions of adolescent choices by showing that independence is only one aspect of many that shapes nutrition of young people. Relationships with various forms of nutritional knowledge shape, not only the ways that adolescents view their diet and exercise, but also the ways that they view their own bodies when fears of fatness are coupled with anti-obesity and nutrition messages from school and the community.

Chapter seven is based on a case study of West Belfast and examines the ways that young people interact with their political economic environment when making nutritional choices (*Aim 5*). This case study is based on ethnographic work in schools, youth clubs, and community organizations in West Belfast in which youth culture and youth resource provision are shaped. This is an important aspect of a nutritional study because it moves beyond direct input and output variables of a nutrition study and helps uncover how nutrition is prioritized by young people and adults who work with young people in the community. In this chapter, I argue that nutrition is not a top priority in a community that is dealing with poverty, drug-use, drinking, crime, and very high rates of adolescent suicide. This grounds the larger nutritional study within a localized understanding of the cultural processes shaping adolescent nutrition in this community and highlights the difficulties of building and implementing workable nutrition programs for young people.

Chapter eight brings together the factors shaping nutritional practices and outcomes in Belfast with lessons learned from the case study conducted in West Belfast. In this chapter, I argue that a broad approach to nutritional practices and nutritional status outcomes in Belfast paints a very complex, and sometimes confusing, picture of adolescent nutrition in an urban industrialized environment. However, looking at multiple factors forces one to embrace the contradictions and complexities of local environments and contend with the wide array of factors that shape nutrition in a city. Adolescent choices are shaped by their own opinions, their exposure to sociocultural influences from a variety of nutrition resources, and aspects of the physical environment that present the boundaries within which they live their daily lives. The full picture of

nutrition in Belfast is complicated, but in chapter eight I make suggestions for how approaches to nutrition in Belfast and other urban, industrialized environments can be improved.

This dissertation is structured in such a way that nutritional practices and outcomes can be examined within the context of Belfast at large and juxtaposed with various aspects of life in Belfast that shape the nutrition of teenagers. As such, the early chapters in this dissertation highlight the unique biocultural outcomes that were uncovered over the course of this research. In particular, the lack of connection between adiposity and income (as measured by postcode) is interesting given the steady connection between poverty and heightened rates of obesity seen in other biocultural studies (Brewis, 2003; Crooks, 2001). Furthermore, a significant connection between low-income and diminished stature is interesting in a developed, industrialized country such as Northern Ireland since it could mark the presence of severe, long-term micronutrient deficiencies or long-term chronic under-nutrition in early childhood caused by nutrient deprived diets in the city. Shorter statures can also indicate poor diets during uterine development (Frisancho, 2003) though testing diets in utero and early childhood are beyond the scope of this project. These discrepancies, along with other statistical connections between diet, exercise, and nutritional status outcomes are highlighted in chapter four to show the unique biocultural environment in which Belfast teenagers are living.

While these biocultural observations are interesting and demonstrate that Belfast is, perhaps, a unique urban, industrialized environment, biocultural anthropologists argue consistently that biocultural outcomes only serve to locate nutritional indicators but

cannot, on their own, reveal the factors shaping these indicators (Eveleth and Tanner, 1991; Bogin, 1999). Therefore, chapters five through seven are designed to present an array of factors that shape adolescent nutritional outcomes in the city. These go beyond simple grouping tools such as age, gender, and SES (although these categories are explored in depth in these chapters) to account for the sociocultural practices that incentivize or deter certain nutritional practices. I then seek to link these practices to nutritional status outcomes to locate aspects of the sociocultural environment in Belfast that play a significant role in shaping adolescent nutritional status. Chapter seven provides, perhaps, the most in-depth view of the sociocultural environment in the city as it focuses on a single area (Catholic West Belfast). This case study serves as an opportunity to assess the sociocultural and physical environments in an area of the city and to identify factors that shape the practices and nutritional status outcomes of teenagers in an urban, industrialized environment. Broader themes from the sample population are explored alongside the case study in chapters five and six to determine the impact that broad sociocultural messages from media sources, family, friends, and community members have on nutritional perspectives, practices, and outcomes among teenagers in Belfast.

Chapter 2: A Biocultural Assessment of Nutritional Practices and Outcomes

Biological anthropologists have long recognized that nutritional status is mediated by interactions with physical and sociocultural environments. Examining the ways that young people negotiate this process gives researchers a broader understanding of the relationship between physical and sociocultural environments and nutritional status. Alexandra Brewis and Meredith Garten (2006) have posited that children can act as "architects as their own biology" because they make diet and exercise decisions that directly affect their nutritional status outcomes". However, these authors focus largely on resistance by young children to parental feeding strategies at family meals, leaving space to further investigate the degree to which young people of different ages and social locations (age, gender, SES, area of town) affect their nutritional status versus the role that sociocultural influences and physical parameters place on childhood nutritional status outcomes. For the purposes of this dissertation, the important question becomes: if young people are actively making decisions for themselves, what types of choices are they making and what sociocultural and environmental factors shape these choices? Furthermore, how do these choices relate to nutritional status outcomes in a population of adolescents? A focus on adolescents allows for more complex conversations about the factors shaping nutritional choices since teenagers have a broader capacity to understand the factors influencing their nutritional knowledge and the choices that they make about diet and exercise.

In this dissertation, I use adaptability theory fused with a political economic, biocultural approach to understand the relationship between the environment, adolescent nutritional practices, and nutritional status. My overall goal is to examine connections

between adolescent perceptions of nutrition, self-reported diet and exercise choices and practices, and biocultural outcomes in Belfast. This facilitates a holistic understanding of the multiple factors shaping biocultural outcomes from which the health of young people is currently extrapolated (particularly amid the current focus on the obesity epidemic which are discussed at length in this chapter and in chapter six).

In the past, adaptability theorists examined the human “ability to adapt” to different environmental conditions (Ulijaszek and Huss-Ashmore, 1997) because biologies are “plastic” or flexible (Lasker, 1969). Today, one group of anthropologists that utilizes an adaptability framework examines biological markers of health and well-being and identifies factors that prohibit or enable a population from achieving adequate levels of health. Yet, adaptability theorists are divided on whether or not inadequate levels of health signify that a population is failing to biologically adapt to stressful environmental conditions (See Schell and Magnus, 2007).

There are two schools of thought in adaptability theory: the evolutionary theorists and the dialectical theorists. Evolutionary adaptability theorists argue that a healthy population is one in which the population's biological outcomes indicate that they are well-adapted to their environment. Therefore, these theorists argue that populations with poor health markers are “maladapted” or biologically ill-equipped to succeed in their given environmental conditions. Critics of evolutionary adaptability theory argue that adaptations and maladaptations in both the past and present are difficult, if not impossible, to isolate in empirical human biological research (Ellison and Grasyńska, 2009) since markers of fitness are isolated to fertility and death. Therefore, in a population that is alive and reproducing, it can be difficult to definitively say that poor

health outcomes are indeed an indication that a population is maladapted biologically to their environment.

Dialectical adaptability theorists are evolutionary theorists who are moving away from purely adaptive evolutionary models because they do not equate health with the capacity or failure to biologically adapt. Like the Marxist evolutionary biologists Richard Levins and Richard Lewontin, these theorists argue that adaptation is a dialectical process in which organisms interact with, and continually reshape, ever-changing environments. Therefore, adaptation cannot be measured in the present because environments are constantly in flux. The dialectical perspective is rooted in Marxist evolutionary biology in which relationships between environments and biologies are dynamic. Levins and Lewontin (1998) argue:

No correct account of the world can ignore the way in which categories like 'organism' and 'environment' or 'individual' and 'collective', if they are to work at all, must be dynamically linked. What we label as a 'dialectical' mode of thought is a mirror of the actual history of things in the world which in their historical actuality acquire their real, but ever changing properties in concrete, but ever changing contexts (xiii)

Since adaptations cannot be measured in the present, Brooke Thomas (1998:43), argues that adaptability is an assessment of “opportunity and constraint to human action and health”, that can be measured using markers of health and well-being. Therefore, dialectical adaptability theorists examine the strategies that people develop to negotiate the resources or limitations to resource acquisition in their environments and the health outcomes that result from these negotiations.

Highlighting different strategies shows that people's actions are not exclusively defined by constraint, and individuals continually make decisions about how to live their lives. For example, Thomas Leatherman (2005:49) argues anthropologists need to: “look

beyond the immediate efficacy of coping responses, to how these responses help construct the very conditions and contests within which humans act”. Leatherman finds that some farmers in Peru work while they are ill, although they know this can diminish their long-term health for short-term agricultural gains. This could be construed as a maladaptive behavior since it results in negative biological outcomes; however, Leatherman argues that it is, in fact, a necessary strategy for farmers who make trade-offs between health and economic saliency in an economically constrained environment.

Furthermore, different strategies have been connected to diverse health outcomes within resource constrained populations. Deborah Crooks *et al* (2007) examine various livelihood strategies in a rural Zambian village to identify trade-offs made by farmers who sustain their families amid food shortages. Crooks *et al* (2007: 674) conclude that farming strategies alleviate childhood malnutrition in some homesteads because: “within the space of vulnerability that is shared by all Gwembe Tonga people, households differentially engage the environment, some more successfully than others”. Therefore, different strategies, rather than differing conditions in the physical environment, can play a role in altering environmental contexts and shaping the resources individuals and small groups are able to obtain.

Adaptability approaches that examine strategies amid constraints have been increasingly applied to urban built environments (Schell and Ulijaszek, 2007; Ulijaszek, 2008) and many are becoming more focused on the activities of children (Panter-Brick, 2002; Brewis, 2003; Brewis and Lee, 2006). Children occupy a social location within many cultures that is different from that of adults, prompting anthropologists of childhood to argue that children should be studied on their own terms (Bluebond-

Langner, 2007). In this research, I have found that young people in Belfast develop strategies to support athletic lifestyles, lose weight, and avoid foods and exercises that they do not like. Building upon an adaptability framework, I discuss the strategies of young people and the various influences that shape these strategies and by doing so illuminate the ways that young people negotiate their environments.

Understanding this negotiation is significant for dialectical adaptability theory because it incorporates a human-centric approach to human biology rather than focusing on biological capacities or environmental limitations. The role of individuals within a population highlights both the structural limitations that lead to health problems in low-income environments and yet pays heed to the creative capacity of human groups to secure resources, even amid constraints. This is particularly interesting when studying children, since their unique sociocultural experience creates the space for a range of actions and perspectives that are very different from those of adults, even when both groups are exposed to similar resources and knowledge.

Nutritional research in urban settings like Belfast is often based upon fears of public health problems such as obesity, cancer, or diabetes. However, individuals living in these cities structure their lives around priorities other than public health. It helps to understand how individuals utilize (or do not utilize) the resources that are available to them, how they access difficult to find resources, and the trade-offs they make to get a more complete picture of the health-related choices that people make.

Biocultural Perspectives:

Looking at the relationship between individual strategies and biological outcomes embodies a biocultural perspective that examines the relationship between culture

(strategies) and biology. Biocultural anthropology is a sub-discipline of biological anthropology that studies the interactions of biology and culture to make sense of contemporary biological variation within and among human populations. A political economic biocultural perspective, based on dialectic adaptability theory discussed above, challenges evolutionary (adaptive/maladaptive) approaches to biological variation that de-emphasize the role of individual organisms and overemphasize the role of the natural environment in shaping biological outcomes. In the words of Stephen Jay Gould (1980):

Organisms are not billiard balls struck in deterministic fashion by the cue of natural selection, and rolling to optimal positions on life's table. They influence their own destiny in interesting, complex, and comprehensible ways. We must put this concept of the organism back into evolutionary biology (129)

In human biology, the role that people play in shaping “their own destiny” has been achieved through a better incorporation of culture into an understanding of biological outcomes. In 1998, Alan Goodman and Thomas Letterman edited *The Biocultural Synthesis*, which places biological problems into historical, socioeconomic, and sociopolitical contexts using a political economic framework. They argue that “evolution and adaptation should be seen as less purposeful and progressive and as more historically contingent” (10).

In doing so, these authors do not take environmental conditions as a given. Instead, they seek a greater appreciation for the “global contexts, history, and social relations that shape local environments” (Goodman and Leatherman, 1998: 19). Therefore, rather than taking the environment as a “natural” unchanging material space, it is viewed as a historical construct that is constantly changing and interacting with individuals. For political economic biocultural anthropologists, biology and culture are not two distinct domains. These anthropologists conceptualize environments as webs of

causation that operate through “multiple pathways” (Crooks, 1997; Thomas, 1998; Dufour, 2006).

Conceptualizing the multiple pathways through which biology and culture interact, biocultural anthropologists can capture biological outcomes while recognizing the range of individual strategies that mediate outcomes. Environments are multifaceted and complex and stressors can affect people differently depending on age, gender, or social location (Pike, 2004). Strategies are best explained through an ethnographic lens, and Darna Dufour (2006) argues that a central focus of biocultural perspectives is to “explicitly recognize the dynamic interactions between humans as biological beings and the social, cultural, and physical environments they inhabit” (1). For Dufour, the relationship between an individual’s circumstances and biological outcomes is mediated by the sociocultural and physical environment in which an individual lives. She calls for a greater ethnographic appreciation of local environments and cautions against over-reliance on universalized constructions of poverty and nutrition (i.e. the assumption that low-income causes obesity).

In this dissertation nutritional status outcomes in Belfast are not the result of any one environmental phenomenon and can best be understood by examining the webs of causation that shape these outcomes. I argue that adolescents' biological outcomes are shaped by the history of Belfast, Northern Ireland, the United Kingdom and global processes. This history has left Belfast with an array of political and economic discrepancies that are associated with poor health outcomes in some communities. These poor health outcomes are contextualized within national and international perceptions of the causes and effects of poor health. A holistic, biocultural approach to nutritional status

can highlight various aspects of the sociocultural, physical, political, and economic environment that shape nutritional status outcomes for young people in Belfast.

However, before I describe, more specifically, how I have conducted this biocultural research, I first explain how I define and use the term “culture” in this dissertation.

Defining Culture:

While multiple causal factors have been incorporated into biocultural studies of human/environment interactions, few of these studies clearly state how authors define culture, making it difficult to understand how culture and biology interact (Dressler, 2005). Yet, despite inadequate definitions of culture, biocultural political economists have dealt extensively with culture as a factor that shapes biological outcomes. Many adaptability theorists draw upon Lawrence Schell (1997) as a starting point for understanding the role of culture in biocultural research. Schell views culture as “less coherent, less problem-solving [...] and as not shared by all or the same for all members of society” (1997: 67). His ideas have pushed many adaptability theorists to appreciate culture as an environmental stressor, *e.g.* poverty, constrained choices, or restricted access to resources. When culture acts as a stressor, it becomes even more difficult for individuals to interact successfully with their environments.

However, saying that culture is a stressor does not inherently define it, and different definitions of culture lead to different approaches in biocultural research. For example, William Dressler (2005) incorporates a cognitive definition of culture that allows him to turn culture into categorical variables. He then models relationships between cultural categories and health outcomes and concludes that the inability to achieve cultural norms leads to negative health outcomes.

Unlike Dressler, I base my own definition of culture on biocultural anthropologists who use a political economic framework to treat culture as a dynamic process of continual change (Goodman and Leatherman, 1998; Crooks, 2001; Dufour, 2006; Moffat and Galloway, 2007). Eric Wolf (1999) highlights the differences between a political economic approach to culture and that employed by William Dressler by arguing:

If it is no longer possible for us, as it was for our predecessors, to assume that culture and language replicate themselves through the impersonal force of 'custom' or through some hypothetical human need for cognitive consistency, then we must try to identify the instrumental, organizational, or ideological means that maintain custom or underwrite the search for coherence (67)

Culture, therefore, is not a coherent, bounded entity that can be viewed as an input or output variable, and an innate desire to achieve cultural norms should not be assumed for all individuals. Instead, culture is an amalgamation of several political, social, ecological, and economic components that differentially affect individuals and are constantly changing and being changed. For biocultural anthropologists who use a political economic perspective, a call by William Dressler to identify the ways that "culture *shapes* biological response" (2005:22, emphasis added) is, therefore, antithetical to the very definition of culture. In a political economic framework, culture is not a unidirectional phenomenon and biological response is not only shaped by, but also shapes and reshapes culture. The question becomes, how can we work with such a moving target?

For the purposes of this dissertation culture is not a tangible thing, state of mind, or set of actions. Instead, culture occurs amid the interactions of structures and individual practices and is an ever-changing process with unique local histories (Roseberry 1994; Wolf, 2001). Therefore, I build upon the political economic theory of William Roseberry

and Eric Wolf and locate culture at the permeable boundary between individuals and the sociocultural, political, and economic structures in which they live their lives. While political economic theory has been criticized for relying too heavily on bounded views of class and a relationship to means of production (Gibson-Graham, 2006), political economic theory is well-suited to this dissertation due to its emphasis on social diversity and the fluidity of structural boundaries. Ultimately, this flexibility has encouraged me as a researcher to draw upon the work of political economists who use the theory to understand the range of behaviors observed in low-income situations rather than imposing an existing set of guidelines and ideals onto a population.

For example, Janet Fitchen's (1987) analysis of consumer behaviors within populations on welfare (1987) provides an excellent example of a political economic analysis of choice that rejects the concept of "right" versus "wrong" choices for those with income constraints. In doing so, Fitchen implements a flexible definition of culture into her work on choices in the context of poverty. In this article, Fitchen (*ibid*) finds that families and individuals with constrained access to resources do not necessarily prioritize basic needs before social needs. In fact, budgets for basic needs such as food are flexible since less expensive foods can be bought and money can be diverted towards social needs such as toys and games for children. Fitchen concludes that researchers need to avoid judgment in order to learn the processes by which people with constrained economic resources make decisions and trade-offs.

Deborah Crooks has found that a rural school in the Appalachian region of the United States continues to sell snack foods, despite concerns for student nutrition, because they need the money to fund educational activities such as field trips. These

educational activities and fieldtrips might come at the expense of healthy snack foods, but they give children in low-income, rural schools access to learning opportunities that they otherwise might not be able to afford. Fitchen and Crooks ask individuals and institutional employees (school teachers) why decisions are made without condemning the choices as wrong, and they work with, rather than condemn, contradictions that arise in the struggle to meet both social and basic needs.

To me, this is the very heart of political economic theory because it prioritizes localized knowledges over academic perspectives and explains decision-making processes amid constraints. I add to these political economic perspectives, to understand how young people in Belfast make choices about what to eat and how often to exercise. I then study relationships between these choices and nutritional status outcomes to examine the biocultural process of nutritional status. For children, financial concerns are diminished and concerns about the appearance, taste, popularity, and accessibility become important (McKinley, 2005; Stephenson, 2007). One of the goals of this research is to understand how children establish the logic upon which they eat certain foods and how this logic might differ from and also reflect the logic of adults.

This logic can deviate from the nutritional standards and guidelines to which children in Belfast are exposed. Anthropologists have long recognized that food-intake among humans is not solely about consuming nutrients (Mintz, 1985; Counihan, 1997). People eat and avoid foods for a variety of culturally-based reasons. Furthermore, biocultural anthropologists have emphasized the role of culture in the unequal distribution of nutritional resources since culture dictates the economic prioritization of some groups over others (Schell, 1992). This dissertation builds upon biocultural

anthropologists who posit multiple pathways through which individuals interact with their physical and sociocultural environments to get the resources they want and need (Schell, 2007). Therefore, in order to understand how and why adolescents in Belfast make decisions about food and exercise, it is necessary to look at multiple aspects of life in the city to understand some of the pathways through which culture and the physical environment interact with choices and practices. This accounts for biological outcomes within physical and sociocultural environments that have their own unique history and are constantly changing.

Looking at the relationship between culture, ecology, and human biology is not new in biological anthropology. In the mid-twentieth century, Paul Baker (Baker, 1962) called for a renewed interest in the relationship between human biology and culture, rather than a focus on humans and the physical environment. Baker made an explicit connection between ecology, culture, and human biology when he said, “neither man’s biology, his culture, nor his physical biotic environment exist in isolation from each other: instead, each affects the other” (21). Furthermore, Baker utilized a circular model of cause and effect rather than a linear model in which biological outcomes result directly from environmental circumstances. For Baker, “this obviates the old chicken and egg controversies which plague many areas of anthropology” and pushed for a more dynamic perception of the spaces that humans occupy in the world and the role of culture in shaping these spaces.

Goodman and Leatherman also speak to this topic in *The Biocultural Synthesis*. The reconceptualization of the environment in this work stems largely from their shift from ecological to socioeconomic stressors. This, they argue, changes the ways we think

about environments because, “it is clear that under conditions such as persistent poverty, where multiple environmental stressors result in unresolved levels of stress, adaptive solutions may be minimal” (54). Rather than give up due to the limited availability of physiological adjustments to environmental problems, Goodman and Leatherman shift their focus on the behavioral trade-offs that people make in severely strained circumstances; moving away from a purely ecological model of environments and accounting for the ways that human sociocultural practices both shape and are shaped by environments, Goodman and Leatherman provide the tools for understanding complex human-environment interactions.

Not only have local environments been placed in their historic and cultural contexts, but the concept of the environment is scrutinized as well in biological anthropology. Michael Blakey (1998) argues that anthropologists, as scientists, need to question the “excessive naturalism” of Western thought because this naturalism “impedes the creation of policies and programs meant to solve [...] social problems today as in the past” (389). For Blakey, deconstructing our notion and definitions of environments and how they are shaped pushes us to challenge possible assumptions undermining our own research questions. In my own research, asking questions about the physical and sociocultural environments of Belfast provides an understanding of life in Belfast, but has also helped me question how knowledge about nutrition is developed and used within the city.

Julie Guthman and Melanie DuPuis (2006) also highlight the repercussions at stake when researchers fail to account for the social underpinnings of the questions on which they base their research. These authors criticize nutrition research that has become

too focused on the role of the environment in shaping diet and exercise choices. They argue that simply removing choices that are deemed as “unhealthy” from an environment does not necessarily remove desire for existing preferences or increase the consumption of “healthy” resources. They go on to say that:

The perfect subject-citizen is able to achieve both eating and thinness, even if having it both ways entails eating nonfoods of questionable health impact (Splenda) or throwing up the food one does eat (the literal bulimic). Those who can achieve thinness amid this plenty are imbued with the rationality and self-discipline that those who are fat must logically lack; they then become the deserving in a political economy all too geared toward legitimizing such distinctions (444)

For these authors, efforts to change the environment to improve nutrition have failed to question the values driving *nutrition researchers*. Guthman and DuPuis remind us that consumers are not “unwitting victims” that cannot make the “right” choices. I incorporate this critique into my own research to determine why adolescents make nutritional choices, without regards to whether or not these choices are sanctioned by public health professionals and academics.

Nutritional Status Outcomes:

The remainder of this chapter explores how biocultural anthropologists have used a political economic perspective to understand nutritional status outcomes within populations. Children’s nutritional status provides an ideal measure of public health due to the development of international height and weight standards and references that determine whether a population is excessively under- or over-nourished (Tanner, 1990). Nutritional status is so refined a measure that, when predictable trends do not occur, it is clear that the population is not getting needed resources (Bogin, 1999). In fact, nutritional status has been deemed “a mirror on society” (Eveleth and Tanner, 1991) due to its utility in locating populations with nutritional deficiencies. Therefore, nutritional

status outcomes allow biocultural anthropologists to understand the effects of human interactions with their environments because they provide a measure of the quality of diets and the ability of individuals to absorb and utilize nutrients. Unlike independent measures that stand alone, nutritional status is a comprehensive measure of height, weight, and body fat stores to determine whether diet and exercise patterns are “sufficient to support optimal” growth in adolescents (Allen, 1990).

While I rely on nutritional status as a measure of health in keeping with the “mirror on society” model provided by growth theorists, I also examine critiques of the “mirror” model of nutritional status in children by incorporating children as “active participants” in shaping their own biological outcomes (Brewis and Garten, 2006). Therefore, I examine the cultural ideals that surround nutritional status as a marker of public health to identify potential repercussions for populations that are exposed to healthy lifestyle messages. Exploring this variation helps me untangle the web of pathways that shape nutritional status outcomes in a sample population in Northern Ireland.

In this dissertation, I provide a two-part explanation of nutritional status in Belfast. First, I describe obstacles and opportunities in the physical environment in Belfast that promote or deter healthy diet and exercise, as well as the political and economic trajectories that shape the conditions in which people live. The second method of explaining nutritional status outcomes in Belfast focuses on the perspectives, attitudes, and choices of young people in regards to their nutrition; thus locating differences in the ways that young people perceive the conditions in which they live.

Since this research takes place in an urban, industrialized environment, it focuses predominantly on measures of body fatness because obesity is such a focus in these locations. A connection between urban, industrialized places and obesity has been prominent in both the academic literature and public health campaigns in Western Europe over the past two decades (Rolland-Cachera, 2000; Lobstein, 2003; Jansen, 2005; Silventoinen, 2004; Wang, 2006). Much of the obesity literature, across disciplines, investigates the genetic or life history causes of obesity (Barker, 2001; Das, 2010; Baig, 2011). Other authors focus on the environmental causes of obesity such as limited access to healthy foods or spaces for physical activity (Swindon, 1999). While biology and environmental conditions are important aspects of nutritional status, biocultural anthropologists examine the biomedical as well as social causes and repercussions of nutritional status that have been deemed unhealthy (Rittenbaugh, 1982) and have also examined unintended outcomes that are associated with obesity prevention and interventions (Moffatt, 2010).

Although biocultural anthropology is poised to highlight the complexities in human/ environment interactions, much of the concern about urban obesity asserts that humans are "maladapted" to live in urban environments (Ulijaszek and Lofnik, 2006). According to this logic, humans are not suited to live the largely sedentary lifestyles of urban locales and this lifestyle is killing us through chronic illnesses. A maladaptive approach to urban obesity clearly falls under the umbrella of an evolutionary adaptability discussed earlier, rather than the dialectical approach. In some cases, these approaches become so focused on the evolutionary development of contemporary eating habits that they greatly diminish the role of individual strategies in making diet and exercise choices

nor do they account for "environments" in their totality (political, economic, physical).

For example, Leslie Sue Lieberman hypothesizes that the bright and attractive qualities of food displays and advertisements trigger “foraging” responses in humans and encourage overconsumption (2006). She argues that:

Evolution has honed human proclivities for voluminous eating and physiological capacities for energy storage that coupled with modern lifestyles of energy-saving conveniences and rapid globalization of fast foods promotes weight gain and obesity (8)

The idea that environments shape choices is a popular one in urban obesity studies focusing on the “obesogenic” aspects of urban environments. Obesogenic environments are those that, through flaws in their social or physical make-up, promote obesity (Swindon, 1999). It is generally believed that changing the environment cancels out the maladaptive aspects of urban places and solves the problem of obesity.

Yet, if we return to a previous point in which political economists say that culture is not a backdrop or a context- it is a process- then framing the environment as the cause for nutritional outcomes undermines opportunities to understand how environments are shaped and reshaped by individuals and broader structuring forces (politics, economy, history). Therefore, a central problem with obesogenic frameworks is that they do not capture the diversity of environments or the wide array of human responses to these environments.

In developed countries, like Northern Ireland, urban centers have both affluence and deprivation. Nutritional markers like obesity have traditionally been used to locate poverty in urban places, which are often a complex mosaic of rich and poor. However, urban environments are not experienced the same by all nor do all people have access to similar environmental structures and cannot, therefore, promote any one biology. Tina

Moffatt and Tracey Galloway find diverse obesity outcomes among a low-income population in Hamilton, Ontario. For example, these authors found that students from the lowest income schools are actually not the heaviest in the sample population, despite wide-held assumptions about the connection between poverty and obesity. These authors argue that terms like “adversity” and “poverty” generalize environments and undermine the diversity that can occur in these places (to this I add the term “obesogenic”). To rectify the limitations of an obesogenic perspective, a biocultural approach captures diversity within urban spaces and provides insights into these localized experiences through community-centered research.

Understanding biological outcomes in urban spaces is a first step in unraveling the complexity of obesity; yet, it seems necessary, amid global concerns over rising obesity rates, to ask what biocultural anthropologists can do to alleviate nutritional problems in urban places. Alexandra Brewis (2011) argues,

Obesity interventions generally do not work because most address obesity in a narrow, reductionist way. Obesity is a complex multifaceted, deep rooted part of the contemporary human condition that resists simple, singular, quick or easy fixes (128).

Biocultural anthropologists are well equipped to understand how our discussions and perceptions of obesity are affecting the lives of people at risk for obesity. Yet, questioning interventions is, perhaps, not the best starting point. Instead, biocultural anthropology is well-positioned to question how discussions about obesity are shaped by cultural perceptions of the “obesity epidemic”.

Tina Moffat (2010) critiques biocultural approaches to the obesity “epidemic” and the largely interventionist mindset that has been adopted by biocultural anthropologists studying obesity. She argues that, to date, biocultural anthropologists:

Have been largely complicit with medical professionals, as we have not considered the way in which childhood obesity has been conceptualized or the implications of this current framework for prevention and intervention (2)

Moffat asserts that biocultural anthropologists have yet to examine the consequences associated with the “individualization” of the obesity rhetoric, which has led to “victim blaming”, or the “conflation of the categories ‘overweight’ and ‘obese’, despite the much higher incidence of disease associated with obesity than overweight” (2-7).

Moffat’s concerns about an over-ready acceptance of biomedical constructs in biocultural work are echoed by Catherine Panter-Brick and Augustin Fuentes (2009). These authors use a biocultural approach to examine the social and biological implications that ensue when people are placed into risk groups or categories. The focus on risk is significant for biocultural anthropologists studying obesity since there are so many associations between body fat and risk for chronic illness. Panter-Brick and Fuentes urge caution when dealing with risk because “an empirical probabilistic statement is readily transformed into a normative, deterministic statement regardless of historical context” (5). Biocultural anthropology, therefore, is not merely another form of biomedical assessment. Instead, it can distinguish the limits inherent in biomedical interpretations of nutritional status and is poised to add a more human component to health research.

Biocultural anthropologists have examined the role of the sociocultural environment in shaping child growth outcomes to move away from purely biomedical models of obesity. This includes parental feeding practices and how cultural factors shape acceptable feeding strategies by parents (Brewis and Garten, 2006). For example, Alexandra Brewis found that obesity rates are climbing among young Mexican boys who are revered by parents and given sugary, high calorie treats as an expression of affection

(Brewis, 2003). Immigration and acculturation also affect parental child-feeding strategies and culminate in dietary changes for families that reflect changes in the food environment (Patil, Hadley, and Nahayo, 2008). Meanwhile, economic constraints shape access to and prioritization of different foods and activities (Crooks, 2001), while race and ethnicity coincide with different eating habits and body ideals that shape biocultural outcomes (Gordon-Larsen, 2001; Ulijaszek, 2012). As mentioned previously, children, themselves, play a vital role in making decisions that shape biological outcomes (Brewis and Garten, 2006). However, I have yet to find any biocultural anthropologists who have studied the factors shaping children's decisions, and I address this gap in the literature in this dissertation.

Children as agents:

To gain a better understanding of the role that adolescents play in shaping their own biological outcomes, I selected five sociocultural influences on diet and exercise (family, friends, school, community workers, and church), at the outset of this research, based on their prominence in the obesity literature. Parents and family are cited as primary factors influencing both positive behaviors, such as breakfast consumption (Merton, 2009), as well as negative behaviors, such as increased soft drink consumption (Denney-Wilson, 2009). The benefits (Frenn, 2003, Doak, 2006) and limitations (Van der Horst, 2008) of school food environments are also cited as primary factors shaping adolescent choices in the literature. This divergence is also found in research highlighting the roles of friends (de la Haye, 2010, Finnerty, 2010), community organizations (Cummins, 2006; Dodson, 2009), the media (Halford, 2004; Harris, 2009) and, to a much lesser degree, church (Resnicow, 2002) in influencing adolescent

nutritional choices. As previous childhood and adolescent nutrition literature shows, community focused approaches are beneficial because the sociocultural environment in which a child lives is complex and provides children with an array of images and messages about how to make choices (Story, 2002; Bauer, 2004; Story, 2004).

Understanding choice is essential, and contemporary research on the relationship between sociocultural influences and child and adolescent nutrition emphasizes two key points 1) children and adolescents currently have a great deal of autonomy over their food and exercise choices (Stephenson, 2007); and 2) increased child and adolescent autonomy over diets and activities is contemporaneous with diminished nutrition outcomes since children tend to choose less healthy foods and more sedentary activities (Neumark-Sztainer, 1999; Story, 2002; Brewis, 2006). Yet, I assert that these arguments represent a generalization of the habits and practices of children. In Belfast there are many distinctions in the ways that students live and the choices they make. Some are very active while others are sedentary; some are very healthy eaters while others eat lots of junk food. During this research, the important question has become: does this variation indicate that adolescents are prioritizing different sociocultural influences? I have learned that sociocultural factors do not map exactly to choices and behaviors and look beyond sociocultural influences to explain the relationship between factors driving nutritional practices and nutritional status outcomes in Belfast.

Yet, complications arise when making connections between nutritional choice and nutritional status outcomes. Mimi Nichter (2000) describes a phenomenon she refers to as “fat talk” in adolescent girls. Nichter found that teenage girls speak about discomfort with their bodies and the need to diet more often than they actually engage in the practice

of dieting. Therefore, there is a distinction between the ways that young people discuss nutrition versus the ways that they make nutritional choices. It has become important for me to understand how young people in Belfast engage with nutrition ideals that they set for themselves as well as the ideals that they get from school or see in public health campaigns. In short, what information shapes the practices in which young people engage?

Ample nutritional advice and interventions already exist in many urban, industrialized places (including Belfast), and children are exposed to healthy eating messages quite often throughout childhood. The problem in such places is not that children make poor choices because they lack nutritional knowledge; it is that they are exposed to competing messages that undermine information about healthy diets and exercise (Contento, 2004). In my own research with young people in Belfast, I have found a generation of students well-versed in nutritional knowledge and advice. While they admit that they do not always adhere to this advice, many also seem to have woven nutritional knowledge into their worldview.

In Belfast, this knowledge has coincided with fears of fatness possessed by young people and has made the urgency of adhering to nutritional advice contingent upon the size and shape of an individual. Students say that nutritional advice should be listened to or should become a greater priority if you are or become “fat”. This evokes questions, not only asking why children make the choices that they make, but also about the ways that young people relate to the nutritional advice and knowledge to which they are exposed.

To develop a biocultural approach to childhood nutrition, I draw from Johann Pottier (1999), who argues that assessment of the relationship between people and nutritional knowledge helps researchers understand how information is integrated into the lives of people in a community. Anthony Worsley (2002) argues that nutritional knowledge is not taken on by individuals in the ways that many “experts” intend. He says that unlike academics and specialists who make nutritional recommendations:

Lay people are unconstrained by ‘disciplines’ and have a much greater number of interests, motivations, and goals than nutritionists...The point is that people have knowledge about what they are interested in” (S563)

To reconcile this he argues that we need to “better document the effects of education” (S565). Pottier’s and Worsley’s works are focused on studying food related issues (largely agricultural) in developing contexts. However, I argue that this perspective can be useful to understand the nutrition ethos in developed countries among under-represented or economically deprived populations that draw the attention of intervention programs. Much of the attention in these environments has gone towards the limited availability of nutrition education or healthy food and exercise resources in low-income environments. Therefore, increased resources in the form of knowledge, food, and facilities are often proposed. However, increased access to these resources has not been empirically linked to improved nutrition (Cummins, 2006). Since increased access to resources does not inherently provide a resolution to nutritional concerns, knowledge of how people perceive their resources can help us understand how resources are used.

Biocultural anthropologists also account for the broader, structural causes of health disparities to reconcile gaps between what people know and what they do. Carol Worthman and Brandon Kohrt (2005) provide a biocultural critique of biomedical and public health paradigms that so often drive nutrition interventions. They argue that these

interventions are not capable of facilitating wide-spread health reform because they do not account for the structural conditions that shape environments. Therefore, paradigms focusing on individual behaviors have been critiqued by anthropologists who seek to understand the broader cultural factors that shape the limits of individual behaviors and then examine the range of strategies that people develop even amid constraints.

Worthman and Kohrt represent the different priorities held by anthropologists and public health practitioners and biomedical researchers. For example, these authors argue that health practice and theory has become too focused on isolating “specific pathways for health improvement”, when instead they should recognize that “health actually occurs at the nexus of convergent factors at diverse levels- individual, household, community, population, and world system” (872). Avrum Shriar (2007) echoes the need for greater attention to knowledge dissemination and the relationships people have with knowledge from institutions, especially for those with limited access to resources. In doing so, we can avoid a conversation about “right” versus “wrong” ways to live and recognize that much of this knowledge is developed in environments where “resource constraints are comparatively non-existent” (276). Therefore, the programs and ideologies that are developed do not necessarily reflect the communities in which they are implemented. Instead, these programs can “aggravate anxieties about social differences within communities” and “[social] pressures are, after all...a part of the development experience (Ansell, 2009: 98).

New knowledge and change does not have to be negative or damaging, but the process of change cannot be understood unless it is studied; and an understanding of the priorities and influences that shape nutrition provides us with a mechanism to understand

nutritional status in Belfast, a complex, multifaceted environment, based on the perspectives of adolescents living in the city. Lawrence Schell *et al* (2007) call for greater investment by biocultural anthropologists in the knowledge of the community to reformulate the basic categories upon which we base our own work to coincide with knowledge and categories at the community level.

To account for local perceptions of nutrition among adolescents in Belfast, I utilize an ethnographic focus on the lives of teenagers living in the city and also employ biocultural methodologies to make connections between the “multiple pathways” that shape biocultural outcomes in Belfast. In doing so, I strive to move beyond a biomedical understanding of adolescent nutritional status and seek a holistic understanding of the factors shaping adolescent nutrition in Belfast, Northern Ireland.

Chapter 3 Methods and analysis:

A holistic examination of the factors influencing and shaping adolescent nutrition in Belfast requires qualitative and quantitative data gathering and analysis. Table 3-1 shows the methodologies that used in this dissertation to meet the aims set forth in Chapter 1. Table 3-1 also includes the number of students who participated in each method of data collection. The purpose of this methodological arrangement is to produce a general understanding of nutritional practices and outcomes in Belfast (via the questionnaire and anthropometric measuring day) and then to use participant observation, interviews, and a depiction of the physical environment to bolster an understanding of adolescent nutrition in Belfast. While the questionnaire is broken down into numerous components, in Table 3-1 (FFQ, PAQ, likert-style, write-ins, and food access questionnaire), all pieces are part of a single, comprehensive questionnaire that is contained in a single document (See Appendix A). Therefore, the sample size of the questionnaire for Aim 1 shows the over-all sample size for all components of the questionnaire.

Table 3-1 Aims, Methods, and Population Sizes

Aim	Method (s) Used	N =
<i>1. Assess nutritional practices and outcomes in Belfast as mediated by age, gender, SES, and geographic area of town</i>	<ul style="list-style-type: none"> • Questionnaire • Anthropometric measurements (height, weight, and waist circumference) 	Questionnaire =275 Anthropometric survey = 218
<i>2. Examine relationships between sociocultural influences and nutritional practices and outcomes</i>	<ul style="list-style-type: none"> • Questionnaire • Anthropometrics 	
<i>3. Determine the role adolescents play in shaping their own nutritional practices and outcomes</i>	<ul style="list-style-type: none"> • Questionnaire • Semi-structured Interviews with adolescents 	Interviews with adolescents =32

Table 3-2 Aims, Methods, and Population Sizes (continued)

<p><i>4. Assess the relationship that adolescents have with nutritional knowledge to determine whether different nutritional messages coincide with different nutritional practices and outcomes</i></p>	<ul style="list-style-type: none"> • Questionnaire • Interviews with adolescents • Interviews with adults • Participant Observation of sources of nutritional knowledge 	<p>Interviews with adults =23</p>
<p><i>5. Identify opportunities for food consumption and physical activities in West Belfast and examine how kids negotiate these options via the mediums of youth culture and youth resource provision</i></p>	<ul style="list-style-type: none"> • Questionnaire • Participant observation at schools and youth clubs • Interviews with adolescents • Interviews with adults • Geographic walking survey 	

All of the methodologies in Table 3-1 follow accepted guidelines for adolescent-aged populations and were approved by the Institutional Review Board (IRB) at the University of Kentucky and the department of anthropology at Queen’s University Belfast. The parents of all adolescent participants were contacted with a letter detailing the research methods and goals for this project. These letters asked parents to discuss participation in the project with their children and to advise their child on whether or not to participate. Written consent from parents was waived by the IRB due to concerns regarding literacy and response rates in the community. Parental letters were distributed to all students at Meánscoil Béal Feirste (around 500 students in all) and 275 agreed to participate in the questionnaire. 218 agreed to participate in the anthropometric measuring day, which required students to take time out of class and be measured. While some of the population (n= 180) overlapped between the questionnaire and measuring day, there were some students who only chose to participate in one aspect of the research rather than both. There might have been some bias in the students that chose to participate in the measuring day as some of the teachers told me that they overheard some

students express concern over being measured because they were uncomfortable with their weight. However, I am not able to say whether these students were in fact heavier than the ones that agreed to participate. All student participants signed letters of assent prior to participating in the questionnaire, measuring day, and/or interviews. Adult interviewees all signed consent forms approved by the University of Kentucky IRB.

The following is an in-depth description of the methodologies described in Table 3-1 in which I detail the guidelines followed for data collection during my time in Belfast. To look for different nutritional practices and outcomes within the sample population, I first divided the sample population into four groups based on factors that have been shown to mediate the relationship between adolescents and nutrition: age, gender, SES, and geographic groups. These mediating factors identify different diet, exercise, and nutritional status outcomes in the sample population. Mediating factors were obtained from the questionnaire and at the measuring day where students provided information about their gender, age, and postcode. Genders were self-identified by students (boy or girl) and ages were determined from birthdates provided by students. Postcodes were used to determine the area of town in which a student lives (North, South, East, West, or outside of Belfast) and to assign a deprivation level based on data from the Northern Ireland Statistics and Research Association's (NISRA) website (Deprivation 2010). The NISRA website has a branch called the Northern Ireland Neighborhood Information Service (NINIS) that provides socioeconomic, education, employment, crime, and health information for each postcode in Northern Ireland. These postcodes are placed into groups of various sizes and ranked so that areas with severe socioeconomic discrepancies can be located. Postcodes have been validated as a proxy measure for SES

in the United Kingdom since they are based on household statistics for small segments of the population (Danesh, 1999; NISRA, 2010; MacInnes, 2012).

Postcodes in Belfast contain two different parts and provide very precise information about location. For example, the postcode BT09 5AW indicates that a student is from Botanic Ward (BT09), which is in South Belfast, and the 5AW identifies, within a few blocks, the street where their house is located. Postcodes are, therefore, a refined measurement and provide information about a small or large area of Belfast depending on the level of analysis that is chosen when using the NISRA website. For the purpose of this research, I chose to use super output areas (SOA) as the basis for ranking deprivation because they are the smallest population units available (2000 people or less) from NINIS and provide more precise deprivation data.

NINIS provides a multiple deprivation score (MDS) for each SOA in the country, which measures the level of social and economic deprivation in a given area of town. The MDS is created from a statistical index comprised of different measures of deprivation including income, proximity to resources, crime, health, and educational attainment. These scores are ranked from the most deprived (an MDS of 1) to the least deprived (An MDS of 899) in Northern Ireland. Asking young people their postcodes was a quick way of obtaining an area level measure of deprivation for young people in this sample without relying on the more generalized deprivation profile of the school. This had the added benefit of providing a glimpse of socioeconomic diversity within the sample population at Meánscoil Béal Feirste.

For the purposes of this research, SES was divided into two categories: “high” and “low”. In accordance with NISRA recommendations, all SOA’s with a multiple

deprivation score below 89 (10% most deprived SOA's) were categorized as severely deprived and classified as "low" SES. Multiple deprivation scores of 90 and above were considered in the high SES group for the purposes of this research, which complies with NISRA data showing that these areas have more moderate levels of deprivation compared to "low" SES areas.

Gender, age, SES, and area of town shaped the outcome of all five research aims I set forth because nutritional practices, outcomes, sociocultural influences, independence, nutritional knowledge, and the negotiation of youth culture and youth resources can have a variable effect on adolescents of different ages, gender, economic backgrounds, and geographic locations.

The anthropometric survey was used to address Aim 1 and Aim 2 by identifying relationships between sociocultural influences on nutrition, mediating factors (age, gender, SES, and area of town), and nutritional status outcomes. The anthropometric survey included measures of heights, weights, and waist circumferences of 218 students enrolled in Meánscoil Béal Feirste. All measuring techniques followed measurement protocols in Lohman *et al* (1988). On the measuring day, participating students were asked to remove jackets, shoes, and heavy sweaters so that they only had on school issued white collared shirts and pants or a skirt. Heights were measured to the nearest .01 mm using a Harpenden anthropometer. Prior to measuring heights, students were asked to stand straight with their arms at their sides and their head in the Frankfort plane. Weights were measured using a Seca 682 digital scale, which was calibrated daily using a 1 kg weight. Waist circumferences were measured to the nearest .1 cm using a flexible cloth measuring tape. Waist measurements were taken at the level of the iliac crest, and

students were asked to exhale to ensure that waist circumference was measured during minimal respiration (Lohman *et al*, 1988).

Height and weight are standard measures of nutritional status and were compared to international reference data from the World Health Organization to identify any nutritional discrepancies in the community. 2006 WHO reference data are validated as a tool to measure nutritional status in populations of children and adolescents over the age of five. These reference data are calibrated to assess nutritional outcomes in populations throughout the world, since they are derived from a sample population from seven countries, both industrialized and non-industrialized (DeOnis, 2008). For this dissertation, height and weight were incorporated in the anthropometric survey since they can be converted to body mass index (BMI) - a measure of body composition. BMI is a useful measure because it allows for a quick and reliable measure of body fatness in a large population (Lohman *et al*, 1988). Although there are multiple reference datasets available, World Health Organization references were selected based on their newly updated reference curves for adolescents that are considered to be more accurate for children over the age of five (DeOnis, 2008).

In recent years, some public health practitioners have argued that is best to supplement BMI with another measure of body fat since BMI can be easily affected by skeletal composition and musculature (Neovius, 2004; Huxley, 2009). Therefore, I also measured waist circumference, which can be used to compare central adiposity between groups within the sample population and can also be converted to waist-to-height ratio (WHR). WHR is an additional measure of body composition that some argue is more accurate than BMI since it is based on a measure of central adiposity rather than weight

(McCarthy, 2006). Although waist circumferences were collected from the sample population and converted to percentiles using guidelines from McCarthy *et al* (2006), these circumference percentiles appeared to be extremely skewed as the results indicated that 80% of the sample population was obese. Given that the McCarthy measurements were taken from adolescents in the 1980s living in England, waist circumference percentiles were dropped from the final analysis in this study since the age or geographic location of the McCarthy population does not seem appropriate for use in contemporary Belfast.

After collecting and analyzing anthropometric outcomes and their relationship to mediating factors, I then compared anthropometric data to adolescent autonomy over diet and exercise choices versus advice from school, home, friends, and community workers (Aim 3). Anthropometric measurements also allowed me to compare nutritional status outcomes for students who related to nutritional knowledge in various ways (Aim 4). Exploring the different pathways shaping nutritional status outcomes is central to this dissertation and moves towards my larger goal of understanding the relationships that shape nutritional status outcomes in the adolescent population of Belfast.

Questionnaire:

The questionnaire is one of the most essential data collection tools used to address all five aims in this dissertation. 275 students at the school agreed to fill out the questionnaire during thirty minute blocks of time set aside by teachers in their classes. The questionnaire contains several different components, each designed to collect a specific type of information about nutritional practices and influences on nutritional practices. The first section is a food frequency questionnaire (FFQ) modeled on the EPIC

FFQ written by the European Prospective Investigation of Cancer Center at Cambridge University. This food frequency questionnaire has been approved for use with adolescent aged children in Northern Ireland (Lietz, 2007). The FFQ is accompanied by food acquisition questions in which students listed the places and people from which they get the foods that they eat (at school, home, a restaurant, youth club etc.). These food acquisition questions provide information on where and how students get their food to determine the level of autonomy they have in selecting their own diets.

The second section of the questionnaire is a physical activity questionnaire based on the Youth Physical Activity Questionnaire (YPAQ), which has been validated for use with children in the United Kingdom (Telford, 2004). The third section of the questionnaire contains a likert-style scale that asks students to rate the level of influence that various people (teachers, community workers, friends, family, etc.) have on the decisions that they make about diet and exercise. On this likert scale, students in the sample population ranked influences from one (“takes no part in my daily life”) through five (“is the most important influence on my choices”). The final section of the questionnaire contains two write-in questions that ask where adolescents in the sample population learn about healthy eating and exercise and whether they think that nutrition should be a top priority for people their age.

The food frequency section of the questionnaire provides a general assessment of the types of foods consumed by children and the frequency with which these foods are consumed. An FFQ is not meant to be an exact measure of dietary intake because it is based on memory recall and self-reported information (Gibson, 2005). FFQs are used in situations where direct observation of food consumption is not possible but allows for a

general picture of diets in a large segment of a population. In this research, students were told to think about serving sizes at school and consider each serving to be a portion. Therefore, if they had a side of broccoli with their dinner, that was a serving of vegetables. Foods that come individually such as slices of bread, a hamburger, or a piece of pizza were considered to be one portion. An FFQ was best suited to this research since I wanted to gain a general idea of what students were eating and compare general dietary practices between genders, age groups, socioeconomic statuses, and areas of town. Furthermore, an FFQ allowed me to quantify food consumption in a way that could be easily compared to nutritional status outcomes from the sample population (see analysis section below for more details). Questions regarding food acquisition supplemented food frequency data to provide a well-rounded picture of, not only what students reported eating, but where they got the foods that they consumed.

Physical activity questionnaires are used by researchers to collect general information about activity for a large sample of participants (Rangul, 2008). At Meánscoil Béal Feirste, students were asked to provide information about the number of hours each day and each week that they were physically active, and the types of activities in which they participated over the past week. Students were also asked to indicate the number of hours they spent watching television, playing video games, and playing on the computer each week. This provided a general comparison of time spent doing sedentary versus physical activities. Much like the FFQ, the physical activity questionnaire allowed me to condense activity data into categorical variables that could be compared to nutritional status outcomes to weigh the role that activity and sedentary behaviors had on measures of body composition (BMI and waist circumference).

The Likert-style portion of the questionnaire provided a tool with which students could scale the significance of various sociocultural factors on their nutritional practices. This scale converted a complex concept (in this case sociocultural influences on nutrition) into a format that could be tested using quantitative analytical techniques (Bernard, 2006). This likert-style scale allowed me to capture dynamic nutritional experiences from a large subset of adolescents living in Belfast and to compare information about sociocultural influences on diet, activity, and nutritional status data.

Finally, the write in portion of the questionnaire was designed to acquire information regarding the places that students learned about nutrition and to determine whether nutrition was a high priority for young people living in Belfast. The answers from two write-in questions not only provided a type of ethnographic data themselves, but they also informed semi-structured interview questions and directed participant observation goals by allowing me to locate significant sources of nutritional information within the city.

The entire questionnaire was shaped by an initial testing phase in which a group of students between the ages of eleven and seventeen helped me locate inappropriate or unclear aspects of the questionnaire. This testing phase took place with adolescents attending a youth club in West Belfast. These adolescents shaped the final questionnaire by pointing out aspects of the questionnaire that they did not understand. They also suggested different foods not listed on the initial questionnaire or foods and exercises they had never heard of. This ensured that the questionnaire was appropriate for use by secondary school students in Belfast and followed general survey testing protocol outlined in H. Russell Bernard's guide to anthropological methods (2006).

The questionnaire played a central role in achieving the aims of this dissertation by providing information about the nutritional practices (food consumption and physical activity) of adolescents (Aim 1) as well as the sociocultural factors that influenced adolescent nutrition (Aim 2). Information about nutritional practices and influences then allowed me to determine whether there was a relationship between adolescent independence and diet or exercise habits (Aim 3), sources of nutritional knowledge and diet and exercise (Aim 4), and access to nutritional resources and diet and exercise (Aim 5). This was central in promoting a holistic picture of adolescent nutrition in Belfast because it highlighted connections among influences, independence, advice and nutritional behaviors and assessed the strength of relationships between nutritional practices and nutritional status outcomes.

Semi-structured Interviews and Participant Observation:

Along with quantitative data gathering tools (the anthropometric survey and the questionnaire), ethnographic data collection techniques in this research included semi-structured interviews and participant observation. Semi-structured interviews were based on a written guide that allowed for open-ended responses that were not addressed in pre-written interview questions (Bernard, 2006). The interview guide was based on questionnaire responses and participant observation of nutrition-related activities in schools and youth clubs. The guide included questions about nutritional behaviors, autonomy over diets, diet and exercise preferences, and sources of nutritional information.

Participant observation involved participating in and observing events in a community and taking field notes that were later recorded and analyzed to bring a greater

understanding of adolescent food and activity practices in the community (Dewalt and Dewalt, 2002). Participant observation shed light on specific questions such as the following: What types of foods do adolescents in Greater Falls eat? What are the physical activities in which adolescents engage? Where and with whom do adolescents eat most of their meals and engage in physical activities? How much time do adolescents spend each week in schools, at church, with families, with friends, or reading magazines, watching television, and seeing movies? I answered these questions by spending time in schools, community centers, and public spaces in which I observed adolescents, their peers, and their families and recorded observations in my field notes.

Participant observation was conducted at St. Pious secondary school, Meánscoil Béal Feirste, two youth clubs in West Belfast, and a detached youth work agency for young people who did not participate in center-based programs. Participant observation in schools included observing school meals (both breakfast and lunch) as well as Home Economics and physical education classes. Participant observation in youth clubs entailed volunteering at nightly youth club programs and youth related events outside of school. At the youth club, I observed as youth workers ran sports programs such as football teams and provided a place for young people to come in the evenings to hang out for unstructured time with their friends. Serving as a volunteer allowed me to interact with the young people in the community, many of whom stopped coming to youth club as participants but stayed on as volunteers. Therefore, serving as a volunteer allowed me to understand the role of teenagers as more active participants rather than recipients of youth services in the community.

Semi-structured interviews with students at Meánscoil Béal Feirste lasted between twelve and twenty-five minutes and were recorded after receiving verbal consent. In these interviews, students were asked about the foods they eat, the exercises they like, and details about their eating experiences at home, school, and other places in the community. Students also responded to several questions about the control they have over their own diets and whether they wish they had more control over their lives. In these interviews, students also discussed their biggest concerns and priorities to highlight the factors in their lives that are more important than adhering to nutritional advice. Finally, students responded to questions about the type of nutritional messages they receive and the people who delivered these messages. From this, interviewees went on to discuss people and places in their lives that were more of a priority for them than others. These interviews supplemented the information collected in the questionnaire to help make sense of trends in the questionnaire data.

I also conducted interviews with adults who live and work with young people in schools, youth clubs, or community organizations. In these interviews, I asked adults to describe the role they play in the daily lives of children and the level of influence they felt they had over children's choices. These adults discussed whether they promote government issued healthy eating guidelines and what they did to reduce obstacles that deter healthy behaviors. Teachers explained how they build curricula and the types of nutritional messages they give students in the classroom. Interviews with canteen workers clarified school food policies and practical applications of healthy meal schemes in UK schools. Youth workers and youth development organizers discussed the role of their organization in the community and whether nutrition was a top priority for their

organization. If nutrition was not a top priority, they pointed out other issues that were more pertinent or more pressing for the community. Finally, parent interviews provided information about nutrition advice at home and parental attitudes towards raising teenaged children. The adult interviews lasted between thirty and forty-five minutes and were recorded with permission.

Semi-structured interviews and participant observation added to my understanding of adolescent nutrition in Belfast through the perspective of adolescents themselves and of the adults who live and work with adolescents. More specifically, ethnographic data highlighted the degree of autonomy that adolescents in the community possessed, since much of the interviews focused on the decisions that young people did and did not make regarding nutrition (Aim 3). Furthermore, semi-structured interviews and participant observation in schools and youth clubs painted a picture of the sources of nutritional knowledge in Belfast to which children are exposed (Aim 4). Finally semi-structured interviews and participant observation explained youth culture and youth resource provision in West Belfast, which facilitated a discussion of the role of culture and resource provision on food acquisition and levels of physical activity in West Belfast (Aim 5).

Survey of the Physical Environment:

Quantitative and ethnographic data collection strategies painted a picture of the sociocultural environment in Belfast, but the physical environment was another important factor shaping adolescent nutrition in the city. A study of the physical spaces through which young people move, detailed food sources and spaces for physical activities. The physical layout of West Belfast was assessed during a geographic walking survey in the

area. This assessment of the physical environment was conducted in a 6 mile area of Catholic West Belfast to supplement the case study in chapter 7. Learning about the physical lay-out of an area of the city helped bolster my case study because it showed the resources available to young people.

During this walking survey, I recorded the number and location of restaurants, shops, and spaces for physical activities (parks and leisure centers) within a six mile radius of Meánscoil Béal Feirste. This offered a layout of the physical environment in Belfast and the proximity of nutritional resources to Meánscoil Béal Feirste. It also allowed me to identify opportunities for food acquisition and physical activity in a community with high rates of economic deprivation. Proximity to fast food and access to physical activity resources are areas of concern in the academic literature of nutritional status in low-income neighborhoods (Jeffrey, 2006; Simon, 2008). The geographic walking survey provided data regarding the food and activity options available to adolescents in West Belfast so that I could highlight the relationship between youth culture, youth resource provision, and the negotiation of available resources (Aim 5).

Data Analysis Plan:

Data collection took place between September 2010 and August 2011, and data analysis was conducted starting in August 2011. Table 3-2 shows the analytical techniques I used to achieve the five aims set forth in chapter one based on the data collection methods listed above. Analytical techniques were both qualitative and quantitative. All qualitative data analysis was conducted using AtlasTi v. 6.2, while quantitative data analysis was performed in WHO AnthroPlus and SPSS v. 20.

Table 3-3 Aims and Analyses

Aim	Method (s) Used	Analytical Techniques
<i>1. Assess nutritional practices and outcomes in Belfast as mediated by age, gender, SES, and geographic area of town</i>	<ul style="list-style-type: none"> • Questionnaire • Anthropometric measurements (height, weight, and waist circumference) 	<ul style="list-style-type: none"> • <u>Nutritional Status</u>: Descriptive data (means) calculated in AnthroPlus and SPSS. • <u>Nutritional Practices</u>: Descriptive data (frequencies) calculated in SPSS; Friedman’s ANOVA to compare portion consumption. • <u>Mediating Factors</u>: Independent samples t-test, ANOVAs and ANCOVAs in SPSS for continual variables. Chi-square tests, Mann-Whitney U test in SPSS for categorical variables.
<i>2. Examine relationships between sociocultural influences and nutritional practices and outcomes</i>	<ul style="list-style-type: none"> • Questionnaire • Anthropometrics 	<ul style="list-style-type: none"> • <u>Strength of sociocultural influences by mediating factors</u>: Chi-square tests and Kruskal-Wallis test for non-parametric data analysis in SPSS. • <u>Relationship between sociocultural influences and nutritional practices</u>: Mann-Whitney U tests in SPSS • <u>Relationship between sociocultural influences and nutritional status</u>: Independent samples t-tests, one-way ANOVAs, and univariate ANCOVA tests in SPSS.
<i>3. Determine the role adolescents play in shaping their own nutritional practices and outcomes</i>	<ul style="list-style-type: none"> • Questionnaire • Semi-structured Interviews with adolescents 	<ul style="list-style-type: none"> • <u>Access to food</u>: Chi-square tests, Mann-Whitney U and Kruskal-Wallis non-parametric tests • <u>Write-in Responses (learn about nutrition and is nutrition a priority)</u>: Thematic coding in Atlas Ti • <u>Interviews</u>: Thematic coding of typed transcriptions in Atlas Ti

Table 3-4 Aims and Analyses (continued)

<p><i>4. Assess the relationship that adolescents have with nutritional knowledge to determine whether different nutritional messages coincide with different nutritional practices and outcomes</i></p>	<ul style="list-style-type: none"> • Questionnaire • Interviews with adolescents • Interviews with adults • Participant Observation of sources of nutritional knowledge 	<ul style="list-style-type: none"> • <u>Write-in Responses</u>: Thematic coding in AtlasTi • <u>Interviews</u>: Thematic coding in AtlasTi • <u>Participant Observation</u>: Thematic coding of field notes in AtlasTi • <u>Comparison with nutritional practices</u>: t-tests and ANOVAs in SPSS
<p><i>5. Identify opportunities for food consumption and physical activities in West Belfast and examine how kids negotiate these options via the mediums of youth culture and youth resource provision</i></p>	<ul style="list-style-type: none"> • Questionnaire • Participant observation at schools and youth clubs • Interviews with adolescents • Interviews with adults • Geographic walking survey 	<ul style="list-style-type: none"> • <u>Food Access Questionnaire</u>: Chi-square tests, Mann-Whitney U and Kruskal-Wallis non-parametric tests • <u>Participant Observation</u>: Thematic coding in AtlasTi • <u>Interviews</u>: Thematic coding in AtlasTi • <u>Geographic walking survey</u>: mapping (Google maps) and frequencies in SPSS

The following data analysis tests were run in SPSS to achieve the aims of this dissertation: one sample and independent sample t-tests; One-Way ANOVAs, Univariate ANCOVAs, and Non-parametric tests (chi-square, Mann-Whitney U, and Kruskal-Wallis). T-tests compared sample means to identify significant differences either within a sample population (one sample t-test) or between groups of the populations (independent sample t-tests) to determine if mean HAZ or BAZ scores differed within the

sample population. ANOVAs also compared means within the sample population to identify significant relationships between independent and dependent variables, but were used to test differences for variables with more than two categories (for this research, age and area of town require ANOVAs because they contain more than two groups).

Univariate ANCOVAs tested for significant relationships between independent and dependent variables in the sample population but also accounted for the potential influence of covariates that might affect outcomes (Field, 2009). ANCOVA's, therefore, allowed me to identify significant differences in nutritional status outcomes while controlling for age, gender, area of town, or income differences.

Mann-Whitney U and Kruskal-Wallis tests ranked median scores for ordinal data to identify behaviors that are more or less common in the sample population (Thomas, 1986). For example, median scores from the questionnaire were ranked so that diet and exercise behavior could be identified for different age groups, genders, areas of town, and income groups in the sample population. Chi-square tests identified significant relationships between outcomes and expected outcomes for categorical data (Madrigal, 1998). Chi-squares were used in this research to identify significant relationships between diet, exercise, and sociocultural variables in the questionnaire.

In the succeeding chapters, data analysis for Aim 1 begins with a description of nutritional status outcomes from the anthropometric measuring day and nutritional practices from the questionnaire, followed by tests of mediating factors in shaping nutritional practices and outcomes. Z-scores were calculated using WHO Anthroplus, which allowed comparisons between height, BMI-for-age and gender to the 2006 reference database (de Onis, 2008). Means and standard deviations were calculated for

height, HAZ, BMI, BAZ, waist circumference, waist circumference percentiles, and waist-to-height ratio. A nominal variable was created in SPSS to determine the level of stunting based on the WHO suggested cutoff (a HAZ lower than -2). Nominal variables were also created based on BAZ reference data to determine the amount of overweight and obesity in the sample population (WHO, 2008).

Questionnaire data were also entered into SPSS with categorical variables being converted into numerical dummy variables to facilitate analysis. Some categories from questionnaire questions were combined to increase sample sizes and improve the strength of analytical tests. For example, the questionnaire asked students to list the number of portions of vegetables they ate each day and gave them the following choices:

0 1 2 3 4 5 or more.

However, for analytical purposes it was necessary to consolidate portions into the following categories:

0 1 to 2 3 to 4 5 or more

A similar process of consolidation was conducted for physical activity where six categories were collapsed into four categories (as seen in the portion example above). Consolidating portion and exercise data allowed me to increase sample sizes and strengthen the power of statistical tests. Once the questionnaire data were coded and consolidated, frequencies were run to determine median diet and activity responses.

Assessing diet and exercise practices also required a comparison between food groups to identify the foods most frequently consumed in the population. Comparisons were also made between time spent each week engaged in physical activity (such as sports, dancing, etc.) versus sedentary behaviors like watching TV, playing on the

computer, or playing video games. First, the data from the questionnaire were combined into categories and coded into discrete numbers for analysis in SPSS. Food group portions and hours of exercise were condensed into categories (as demonstrated in the previous paragraph) and converted to discrete numbers to delineate these collapsed categories. Comparisons between groups of data (food groups and hours of exercise) were run using Friedman's ANOVA tests in which median responses were ranked in descending order. The Friedman's ANOVA, therefore, ranked broad diet and exercise trends to identify general dietary and exercise habits in the sample population (Field, 2009).

The final steps in analyzing data for Aim 1 required: 1) determining associations between nutritional practices and nutritional status outcomes accounting for different genders, ages, SES levels, and areas of town; and 2) determining associations between anthropometric and questionnaire data to see if nutritional practices related to any nutritional status outcomes (while controlling for age, gender, SES levels, and area of town). Independent samples t-tests and one-way ANOVAs compared mediating factors to continuous anthropometric variables. Meanwhile, chi-square tests and Mann-Whitney U tests facilitated comparisons between categorical variables by mediating variables (age, gender, etc.). Finally, I assessed the relationship between nutritional practices and nutritional status outcomes using a series of one-way ANOVAs and univariate ANCOVAs in which I controlled for mediating factors and identified significant relationships between practices and outcomes.

Data analysis for Aim 2 was conducted in SPSS using questionnaire and anthropometric data. Chi-square tests and non-parametric Kruskal-Wallis tests were

used to determine frequently selected strength rankings for sociocultural influences on nutrition. This showed the strength that various sociocultural factors such as friends, family, television, school and church had on the nutritional choices of adolescents of different genders, ages, income levels, and areas of town. Next, Mann-Whitney U-tests were run to identify relationships between nutritional practices and sociocultural influences to determine whether strength of sociocultural rankings affected diet and exercise practices in the sample population. This was followed by a series of independent samples tests and one-ways ANOVA tests to identify significant relationships between individual sociocultural influences and nutritional status outcomes. Univariate ANCOVAs assessed relationships between sociocultural influences and nutritional status outcomes when controlling for nutritional practices to determine whether sociocultural influences shaped nutritional status when accounting for different nutritional practices.

Data analysis for Aim 3 was based on questionnaire, anthropometric, and ethnographic data. Analysis of this aim was based on sections of the questionnaire that asked students to list where they get the foods that they eat (including how often they buy food for themselves at a shop or restaurant). I compared food acquisition strategies with nutritional practices and outcomes in non-parametric tests (Mann-Whitney U for dichotomous variables and Kruskal-Wallis for multiple variables). This information was then supplemented with interview data from adolescents and people in the community who lived and worked with adolescents to understand the breadth and limits of adolescent independence when making nutritional choices. The interview data were transcribed and coded using AtlasTi. Thematic codes describing sources of nutritional knowledge were

categorized into five groups, and the relationship between these groups and nutritional practices and outcomes was assessed using one-way ANOVA and t-tests in SPSS

Analysis for Aim 4 was based on write-in responses on the questionnaire, interviews, participant observation, and quantitative tests to determine the relationship between nutritional knowledge and nutritional practices and outcomes. Write-in response analysis is described in the paragraph above and interviews and participant observation analyses were based on the emergence of thematic codes derived from interview transcriptions and field notes in Atlas Ti.

Analysis for Aim 5 was based on the questionnaire, interviews, participant observation, and a geographic walking survey of West Belfast. Data for this aim came exclusively from students in the sample population that lived in West Belfast so that it could be reliably compared to ethnographic interviews and participant observation conducted at schools, youth clubs, and community resource centers in West Belfast. The goal of this case study was to examine the role of youth culture and youth resource provision in shaping the nutritional practices of adolescents. These data shed light on the frequency with which students shop for themselves at stores and eat at restaurants or take-aways to determine the level of autonomy teens have in shaping their own diets. Comparisons in food access between adolescents of different ages, genders, and income levels revealed factors shaping food acquisition strategies for adolescents in West Belfast using non-parametric data analysis techniques for categorical variables (chi-square, Mann-Whitney U, and Kruskal-Wallis). Field notes and interview transcripts were coded using Atlas Ti to look for themes in these qualitative data.

To collect points for the walking survey, I used a handheld GPS and took a point at each restaurant, exercise facility, or food shop. Details about each point were recorded on a worksheet that was then entered into SPSS. I then drew a map using Google mapmaking software and looked at frequencies of various types of food and exercise venues using frequencies in SPSS. This map shows (see Figure 6-1) the parameters of the area covered while the frequencies show which resources are available to students and how many of these resources exist.

All of these methods and analyses provided a holistic picture of adolescent nutrition in Belfast. This holistic picture highlighted the complex web of resources, strategies, choices, and behaviors that shaped nutritional status outcomes. Looking at multiple aspects of the nutrition environment is a key tenet of a biocultural approach since the incorporation of these aspects paints a localized picture of nutritional status outcomes in an urban, industrial environment. In this research, a mix of qualitative and quantitative data collection and analyses promoted a broad picture of adolescent life in Belfast in the hopes of identifying factors that were significantly shaping nutritional practices and outcomes in the city.

Chapter 4: The two-way mirror: Factors shaping nutritional status outcomes in

Belfast:

In this chapter, I assess the nutritional practices and outcomes of a sample population in Belfast and determine the role that gender, age, SES, and geography play in mitigating nutritional practices and outcomes (Aim 1). Next, I examine the strength of influences that sociocultural factors (family, friends, teachers, the media, community workers and church leaders) have on adolescent nutrition to identify factors associated with healthy and unhealthy nutritional practices and outcomes (Aim 2). When examining biocultural outcomes within a population, especially an urban population, we see a range of conditions and practices that relate to biocultural outcomes in complex ways (Schell and Ulijaszek, 1999; Moffat and Galloway, 2007). In this chapter, anthropometric data provide insights into the range of nutritional status outcomes in Belfast that reflect the physical, sociocultural, and political-economic environment in which biocultural outcomes are produced. Meanwhile, an ethnographic questionnaire and semi-structured interviews provide additional background on the factors that influence adolescent diet and exercise practices and these have potential to shape nutritional status.

Low-income urban environments in industrialized countries are generally associated, in the academic literature, with obesity. Many researchers have found that low-income groups cannot afford healthy foods so they replace these foods with high-fat, high calorie cheaper options that make them feel full but lead to weight gain (Burdette, 2004; Sallis, 2006; Dowler, 2008). However, biocultural anthropologists have demonstrated that ethnicity (Gordon-Larsen, 2008), income (Moffatt and Galloway, 2007), and gender (Crooks, 2001; Galloway, 2010) can lead to different nutritional status

outcomes within low-income environments. Furthermore, some low-income children in urban, industrialized places have shorter statures than children from higher SES groups indicating that obesity might accompany micro-nutrient deficiencies for children growing up in poverty (Crooks, 2001). Poverty is a complex concept and can manifest itself in different ways depending on the local context (Dufour, 2006). Since nutritional status outcomes are the result of such variable factors, it is important to examine factors shaping nutritional status outcomes at the local level (*ibid*). In this chapter, I will examine the nutritional status outcomes found in the sample population from Meánscoil Béal Feirste. I will demonstrate that low-income does not have a significant influence on nutritional status outcomes, but it does have a significant influence on stature. While income does not significantly affect body composition, significant correlations between adiposity and age and gender are found in the sample population. This is significant since it goes against studies that have associated low-income and overweight and undermines the obesogenic literature, which argues that obesity in urban places is often the result of low-income families being unable to access healthy resources. This chapter sets up the rest of this dissertation in which nutritional status outcomes are presumed to be the result a complex web of sociocultural and geographical features that surround young people along with the decisions that young people make about diet and exercise.

The multiple pathways shaping biocultural outcomes can be difficult to discern amid a vast web of influential factors. Biocultural anthropologists identify numerous, individual experiences within a population (Pike, 2004; Pike 2010) that allow for variable conditions, interactions, and outcomes within a population (Goodman and Leatherman, 1998). The purpose of examining the role of mitigating factors in this dissertation is to

understand a range of adolescent practices, while maintaining group sizes that support meaningful statistical outcomes. Therefore, connecting nutritional practices to nutritional status in a sample population of adolescents creates a space in which I begin to explore the influences and practices that relate to biocultural outcomes for adolescents in Belfast.

It is important, before describing nutritional status outcomes, to establish what I mean by “nutritional status”. Nutritional status is a measure of height, weight, or body fat, but it has also been used for decades by a variety of health practitioners, including biocultural anthropologists, to measure the general health of a population (Eveleth and Tanner, 1991). Nutritional status is a holistic measure of height, weight, and circumferences or skinfolds that accounts for the levels of food intake and energy use (or lack thereof) within a population. In short, nutritional status “is typically used to refer to body size and the amount of body fat as long-term measures of energy balance” (Snodgrass, 2012). Rates of growth vary within a population of adolescents, and to measure nutritional status in a population requires that age and gender must be accounted for. Therefore, the measures of nutritional status in this chapter control for age and gender (height-for-age, BMI-for-age, waist circumference percentiles, etc.).

Generally, nutritional status in urban, industrialized places is associated with resource access, which is connected to socioeconomic status such that nutritional status is markedly lower in populations with limited access to political and economic resources (Bradley and Corwin, 2002). Children and adolescents in the United Kingdom who come from lower socioeconomic backgrounds have higher rates of overweight and obesity despite limited economic resources (Kinra, 2000; Stamatakis et al, 2005; Booth, 2005; Robertson, 2007) and this pattern has also been found in Northern Ireland (Mutunga,

2006). While obesity rates are high, there is also evidence that economic deprivation in the United Kingdom is associated with under-nutrition as lower SES children are more likely to be shorter in stature than children from higher SES groups due to long-term micronutrient deficiencies (Armstrong et al, 2003(a); Armstrong et al 2003 (b); Taylor et al, 2005). Other factors such as gender (Wardle, 2004; Bere, 2008), and age (Cooke, 2005; Westenhoefer, 2005) play a role in shaping nutritional practices and status outcomes in the UK since these factors shape different experiences for children within populations.

Geography is another significant influence on nutrition in Belfast where children from West Belfast have diets high in calories compared to other areas of the city (Bunting, 1999). Geographic location shapes multiple facets of life in a city including distance from necessary resources such as adequate medical care and grocery stores and can therefore shape dietary and health-related outcomes (Moffat and Latham, 2005; Cummins, 2007). Therefore, there is likely to be a high rate of obesity in Belfast with the possibility of micronutrient deficiencies due to the high rates of poverty in the city. Geography is also examined since health outcomes differ widely from one area of Belfast to another (NINIS, 2008).

In general, adolescents in the sample population are heavier than the 2006 World Health Organization (WHO) reference population indicating that diets and activity levels might be inadequate in Belfast. HAZ ranges from -3.05 to 4.445 and BAZ ranges from -2.18 to 3.35. The mean HAZ score in the sample population does not differ significantly from WHO reference data indicating that the over-all sample population in Belfast is not significantly shorter-for-age than a healthy reference population ($t(214) = -1.200, p$

=.231). Meanwhile, the average BAZ score in the over-all sample population is significantly higher than the WHO reference population mean, indicating that the sample population in Belfast is significantly heavier than adolescents from the reference population ($t(216) = 11.193, p = .000$) (see Table 4-1 for breakdown of HAZ and BAZ by age and gender). Both HAZ and BAZ outcomes show a great deal of variation (with a standard deviation of 1.08 and 1.11 respectively) so I examine age, gender, SES, and area of town to identify groups with high rates of diminished stature for age and obesity to determine if some groups are more nutritionally deficient than other.

Table 4-1 Descriptive Statistics Height, Weight, BMI, and Waist-to-Height Ratio (WHR)* by age and gender

Age		N	Mean	Std. Deviation	
11	Boys	Height (cm)	7	153.814286	8.4420433
		Weight (kg)	7	54.59	10.774
		BMI	7	23.00	3.774
		WHR	7	.4887	.05816
	Girls	Height (cm)	4	146.900000	10.0968642
		Weight (kg)	4	55.70	16.419
		BMI	4	25.35	4.538
		WHR	4	.5178	.05212
12	Boys	Height (cm)	22	153.795455	5.9482272
		Weight (kg)	22	51.35	13.417
		BMI	22	21.56	4.857
		WHR	22	.4593	.04841
	Girls	Height (cm)	26	152.563462	6.5646258
		Weight (kg)	26	50.38	14.943
		BMI	26	21.35	5.061
		WHR	26	.4548	.05529
13	Boys	Height (cm)	22	156.700000	10.8388191
		Weight (kg)	22	52.53	13.150
		BMI	22	21.15	4.043
		WHR	22	.4450	.03642
	Girls	Height (cm)	21	154.228571	6.3591778
		Weight (kg)	21	53.37	11.305
		BMI	21	22.31	4.065
		WHR	21	.4611	.04895

Table 4-1 Descriptive Statistics Height, Weight, BMI, and Waist-to-Height Ratio (WHR)* by age and gender (continued)

14	Boys	Height (cm)	19	167.502632	7.8253589
		Weight (kg)	19	67.54	13.725
		BMI	19	24.05	4.388
		WHR	19	.4600	.06112
	Girls	Height (cm)	26	158.326923	7.0405004
		Weight (kg)	26	56.25	10.247
		BMI	26	22.31	3.134
		WHR	26	.4478	.03020
15	Boys	Height (cm)	16	169.056250	9.6522169
		Weight (kg)	16	69.19	12.988
		BMI	16	24.06	2.817
		WHR	16	.4622	.04918
	Girls	Height (cm)	9	160.055556	7.0510834
		Weight (kg)	9	60.39	11.567
		BMI	9	23.44	3.790
		WHR	9	.4596	.03229
16	Boys	Height (cm)	17	172.917647	5.9598904
		Weight (kg)	17	67.08	6.225
		BMI	17	22.42	1.475
		WHR	17	.4320	.02495
	Girls	Height (cm)	7	163.942857	6.9605692
		Weight (kg)	7	66.84	2.683
		BMI	7	24.97	2.295
		WHR	7	.4499	.03786
17	Boys	Height (cm)	12	177.741667	6.8531955
		Weight (kg)	12	72.18	8.642
		BMI	12	22.82	2.110
		WHR	12	.4434	.02859
	Girls	Height (cm)	9	167.333333	11.3660679
		Weight (kg)	9	62.71	8.175
		BMI	9	22.47	2.922
		WHR	9	.4497	.02661

* WHR differs significantly by age (for boys and girls) in a one-way ANOVA $F(210, 6) = 2.789, p = .013$

Table 4-2 shows nutritional status outcomes in the sample population by age and gender. There are significant differences in waist-to-height ratio by age in the sample population ($F(210, 6) = 2.789, p = .013$). Since WHR is simply a ratio of waist circumference to height, all children, regardless of age or gender, who fall below a .5 WHR are considered healthy. WHR becomes lower for older students in the sample population indicating that younger students have higher waist circumferences in relation

to their height than older students. There are significant differences in BAZ, where BAZ generally declines with age when controlling for gender in a univariate ANCOVA ($F(209, 6) = 2.350, p = .032$). Although BAZ scores do not differ significantly by gender, once obesity is converted into WHO cut-offs based on BAZ scores, 24% of the boys in the sample population are obese compared to only 10% obesity in girls- a difference that is significant in a chi-square test ($\chi^2(2) = 9.260, p = .010$) (Table 4-3).

Table 4-2 Nutritional Status by age and gender

	Age	HAZ			BAZ*			WHR**		
		Mean	Std Dev	N	Mean	Std Dev	N	Mean	Std Dev	N
Male	11 & 12	0.05	1	35	0.96	1.02	35	0.46	0.05	35
	13	0.24	0.92	31	1.13	0.95	31	0.45	0.04	31
	14	-0.08	1.31	21	0.94	0.98	21	0.44	0.05	21
	15	-0.06	1.46	10	0.39	1.4	10	0.44	0.03	9
	16 & 17	-0.21	0.89	19	0.77	1.14	19	0.45	0.04	19
Female	11 & 12	0.01	0.79	24	1.36	1.08	24	0.48	0.05	24
	13	-0.75	0.92	13	1.25	0.8	13	0.46	0.03	13
	14	-0.06	1.46	24	0.31	1.39	24	0.45	0.05	24
	15	-0.24	1.06	15	0.6	0.97	15	0.45	0.04	15
	16 & 17	-0.28	1.03	26	0.4	1.02	26	0.45	0.04	26

* $F(209, 6) = 2.350, p = .032$; ** $F(210, 6) = 2.789, p = .013$

Table 4-3 BAZ Weight Categories by Gender*

		Freq	%	Cumulative %
Boys	Healthy	68	58.6	58.6
	Overweight	24	20.7	79.3
	Obese*	24	20.7	100.0
Girls	Healthy	53	52.0	53.0
	Overweight	37	36.3	90.0
	Obese*	10	9.8	100.0

* Significant differences by $\chi^2(2) = 9.260, p = .010$

Tables 4-4 and 4-5 show nutritional status outcomes for the various SES and geographic groups represented in the sample population. Both SES and area of town

have a significant effect on height-for-age z-score outcomes in the sample population when controlling for gender. Height-for-age z-scores fall below the healthy reference mean for low SES students and above the mean for high SES students; however, there is little to no stunting observed in the sample population and the average HAZ for low SES students do not fall in an unhealthy range since they are above a z-score of -2 (see Table 4-4). The mean HAZ (-.215) for the low SES group is significantly lower than the WHO reference mean ($t(139) = -2.429, p = .016$), and students from West Belfast also have a mean HAZ (-.225) that is significantly lower than the WHO reference mean ($t(151) = 2.723, p = .007$).

Tables 4-4 and 4-5 show that students from lower SES areas have a slightly, but not significantly lower BAZ scores than students from high SES groups. BAZ scores are relatively similar in West Belfast and other areas of town indicating that geography does not play a big factor in shaping body composition in Belfast. Adolescents from both high and low SES groups have mean BAZ scores (high: .884; low: .831) that are significantly higher than the average BAZ score for the WHO reference population ($t(141) = 8.315, p = .000$) (*low SES*) and ($t(69) = 7.444, p = .000$) (*high SES*). Likewise, students from West Belfast, North Belfast, and outside of the Belfast metropolitan area all have BAZ scores significantly higher than the WHO healthy reference mean ($t(153) = 8.460, p = .000$) (*West Belfast*), ($t(33) = 8.020, p = .000$) (*North Belfast*), and ($t(15) = 2.159, p = .048$) (*outside Belfast*).

Tables 4-4 and 4-5 also show that students from different socioeconomic backgrounds and different areas of town have significantly different HAZ scores. Adolescents from low SES communities have a significantly lower mean HAZ score (-

.215) than students from the high SES group (.176) $t(208) = -2.537, p = .012$. Students from outside West Belfast have higher mean HAZ scores (.37) than students from West Belfast (-.11) when controlling for age in a univariate ANCOVA ($F(212, 1) = 7.645, p = .006$). This could indicate the presence of micronutrient deficiencies at a higher rate in West Belfast, which would not be surprising given that it is the most impoverished area of the city.

Table 4-4 BAZ and HAZ by SES groups and gender

		BMI-for-Age (BAZ)					Height-for-age* (HAZ)				
		Mean	Std Dev	N	Min	Max	Mean	Std Dev	N	Min	Max
Low SES	Male	0.84	1.1	75	-1.35	3.35	-0.19*	1.06	75	-3.05	2.98
	Female	0.83	1.15	65	-2.18	2.78	-0.31*	1.02	65	-2.51	1.75
High SES	Male	1.04	0.95	37	-0.64	2.84	0.45*	0.89	37	-1.32	2.26
	Female	0.69	1.21	34	-1.81	3.06	0.04*	1.21	34	-1.93	4.45

* Significant Differences in ANCOVA $F(1, 205) = 10.8, p = .001$

Table 4-5 Nutritional Status by Area of Town

		BMI-for-Age (BAZ)					Height-for-age* (HAZ)				
		Mean	Std Dev	N	Min	Max	Mean	Std Dev	N	Min	Max
West Belfast	Male	0.91	0.95	83	-1.35	3.35	-0.11*	1.03	83	-3.05	2.27
	Female	0.68	1.03	72	-2	2.48	-0.23*	1.14	72	-2.41	4.45
Other areas	Male	0.96	1.28	33	-1.2	2.84	0.37*	1.08	33	-1.32	2.98
	Female	0.9	1.47	30	-2.18	3.06	-0.19*	0.98	30	-2.51	1.75

* Significant Differences in ANCOVA, $F(1, 212) = 7.645, p = .006$

In conclusion, adolescent nutritional status is shaped by a variety of mediating factors in Belfast. There are significant differences in HAZ scores between different SES groups and areas of town in the sample population where students from lower income groups have lower HAZ scores and students from West Belfast also have lower HAZ scores. Meanwhile body composition (measured in WHR and BAZ) differs by age and gender where younger students (ages 11 and 12) and boys are more likely to have

weights that could be categorized as unhealthy. However, the differences in body composition means, though significant, are not vastly divergent, which makes sense given the over-all mean BAZ score is above average for the entire sample population. This indicates that diet and exercise practices could be different for students from different social locations (this will be tested in the next section) and that nutritional status outcomes differ depending on age, gender, SES, and geographic region, *i.e.* issues of deprivation and sociocultural influences are both likely to play a role in shaping adolescent nutritional status. Examining adolescent diet and exercise information from the questionnaire sheds light on different behaviors for different groups of adolescents. Since SES and geography are significantly related to HAZ scores and age and gender have been shown to significantly affect BAZ scores, in the next chapter, I will examine whether there is any indication that students from low-SES communities eat less micro-nutrient rich diets or if diet and exercise patterns differ for adolescents from different age and gender groups.

Nutritional Practices:

In general, students in the sample population most frequently mention consuming fruits, followed by fried food and sweets, and then vegetables in a Friedman's ANOVA, ($\chi^2 (2) = 11.089, p = .003$) (Table 4-6). There are no significant differences in the consumption of portions of vegetables, fruit fried food/sweets, meat/dairy, or starches for students of different ages or genders (Table 4-7). Table 4-8 shows consumption by area of town and SES, but nonparametric tests reveal no significant differences in consumption by geography and income (see Table 4-8). The over-all picture of diet in

the sample population indicates that students of different ages, genders, geographic locations, and SES groups do not say they consume significantly different portions of food groups from one another.

Table 4-6 Portions of Vegetable, Fruit, and Fried Food/Sweets consumed*

	Number of Portions	Frequency	%	Cumulative %
Portions of Vegetables	0	13	5	5
	1 to 2	180	65	71
	3 to 4	70	25	97
	5 +	9	3	100
Portions of Fruit	0	9	3	3
	1 to 2	153	55	60
	3 to 4	86	31	92
	5 +	21	8	100
Portions of Fried Food/Sweets	0	5	2	2
	1 to 2	160	58	60
	3 to 4	84	30	91
	5 +	24	9	100

*(χ^2 (2) = 11.089, $p = .003$)

Table 4-7 Frequency of Portion consumed by Age and Gender

		Vegetables				Fruit				Fried Foods/Sweets				Meat/Dairy				Starch			
		0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +
Boys	11 & 12	1	13	7	0	0	9	10	2	1	11	6	3	1	8	9	2	1	17	2	1
	13	1	10	5	0	0	11	6	0	0	9	5	2	0	7	6	4	0	10	5	0
	14	3	10	4	0	1	12	3	0	1	8	7	1	1	5	6	4	1	13	3	0
	15	0	12	5	1	0	9	9	1	0	11	6	2	0	8	9	2	0	12	6	1
	16 & 17	0	23	12	2	0	22	10	4	1	23	9	4	0	19	16	2	0	20	12	5
Girls	11 & 12	4	20	9	0	1	16	13	3	0	26	7	0	0	13	14	4	2	20	10	1
	13	0	11	6	3	1	7	10	2	0	14	6	1	1	11	7	2	0	10	9	1
	14	3	28	8	0	2	21	11	5	1	20	13	5	1	18	16	4	0	21	15	3
	15	0	20	3	1	1	15	6	2	1	13	6	4	0	13	9	2	0	15	5	3
	16 & 17	1	28	10	0	2	28	6	2	0	19	17	2	1	21	15	1	0	24	13	1

Table 4-8 Frequency of Portion Consumed by Area of Town and SES

	Portions of Vegetables				Portions of Fruit				Portions Fried Foods/Sweets				Portions Meat/Dairy				Portions Starch			
	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +
W. Belfast	8	119	42	5	5	101	54	13	3	108	48	17	4	81	68	20	3	105	53	13
Other Areas	3	50	19	3	3	41	23	7	2	41	29	2	0	36	33	5	1	45	25	2
Low SES	9	112	42	4	7	91	54	14	1	97	55	15	1	80	69	18	2	101	53	10
High SES	3	58	20	4	1	53	23	6	4	51	25	5	3	37	34	8	2	52	25	5

Examining the various types of food in each food group that are consumed by adolescents provides another potential measure of dietary differences in the sample population, since there is little variation in portion in-takes. Table 4-9 shows that students eat a greater variety of fried foods and sweets than any other food group. The average student in the sample population consumes just over seven different types of fried foods and sweets in a week compared to only two different types of meat and dairy. This greater diversity in the fried foods/sweets group compared to other food groups shows that students are assessing a greater variety of unhealthy foods than they are healthy foods.

It is clear that nutritional practices are influenced by various social locations in the sample population and that age in particular plays a role in the diet and exercise practices of young people in Belfast. However, it is striking how little variation there is between students from different areas of town or different socioeconomic levels. This is particularly interesting in light of the suggestion earlier in this chapter that micronutrient deficiencies might be common among low-income adolescents in Belfast. Since the FFQ did not measure micronutrient intake, it is not possible to say whether students from

different groups differ in the amount of micronutrients they take it. Therefore, further research could shed greater light on the diet and exercise habits of students in the city or it could be an indication that diets between income groups were disparate in the past but have since become more similar in the foods available to people of different income levels.

Table 4-9 Dietary Variety: The average number of different foods consumed within each food group

	N	Mean	Std. Deviation
Ate Vegetables	277	4.91	2.50
Ate Fruit	277	4.35	2.38
Ate Fried Food/Sweets	277	7.32	2.81
Ate Starch	277	4.43	1.69
Drank Non-water	277	3.14	1.32
Ate Dairy	277	2.10	.88
Ate Meat	277	2.40	1.53

Physical Activity:

Hours of exercise and television viewing by age and gender are shown in Table 4-10. While there are no significant differences in exercise and sedentary behaviors by age, there are significant differences by gender, where boys get more hours of exercise each week than girls, ($U = 7350, p = .013$). Meanwhile, in a Mann-Whitney U-test girls spend significantly more time watching television, playing video games, or sitting at the computer than do boys ($U = 7815.5, p = .040$). Table 4-11 shows hours of exercise by area of town and SES. Students from higher SES groups do not get significantly more physical activity each week nor do they spend significantly less time at sedentary activities ($U = 6220.5, p = .146$). Therefore, the biggest factor shaping physical activity in the community is gender as boys get more exercise than girls when comparing median hours of reported exercise in a Mann-Whitney U test. This theme came across in

interviews with PE teachers who explain that many of boys are more willing to participate in sports than girls. David says:

but PE is one of those subjects where a lot of kids would shy away especially girls wouldn't want to exercise in front of their peers and things so we have to try to encourage them and praise them when they do participate to make them lifelong participants. Just focus on enjoyment initially as opposed to shouting at them for not bringing their stuff in, it's just about trying to find a balance (David, interview, March 2011)

There is an increasing effort to encourage girls to become physically active through camogie teams (women's hurling), and a growing number of girls football teams. Many of the girls also participate in hip hop dance groups at local youth clubs.

Table 4-10 Activity Levels by Age and Gender

Age	Gender*	Hours of Exercise					Hours of Sedentary Activities				
		0	1 to 2	3 to 4	5 +	TOTAL	0	1 to 2	3 to 4	5 +	TOTAL
11 & 12	Male	2	9	2	7	20	4	6	1	10	21
	Female	2	3	13	14	32	4	12	9	7	32
13	Male	1	5	1	10	17	3	3	6	5	17
	Female	5	5	5	6	21	1	3	7	10	21
14	Male	0	5	3	8	16	1	4	6	5	16
	Female	1	17	9	11	38	2	6	7	23	38
15	Male	2	3	7	6	18	1	9	3	6	19
	Female	4	6	5	8	23	0	8	8	8	24
16 & 17	Male	4	4	13	16	37	5	11	10	11	37
	Female	10	13	10	6	39	5	6	7	21	39

* ($U = 7350, p = .013$)

Table 4-11 Activity Level by Area and SES

	Hours of Exercise					Hours of Sedentary Activities**				
	0	1 to 2	3 to 4	5 +	TOTAL	0	1 to 2	3 to 4	5 +	TOTAL
Low SES	15	44	45	66	170	17	44	40	71	172
High SES	11	18	25	21	75	7	21	19	29	76

*(U= 3.124, p=.269) ** (U = 6220.5, p = .146)

Gender plays a role in shaping activity patterns in Belfast, but there is a limited relationship between exercise practices and nutritional status outcomes in the sample population. Since I am interested in short-term nutritional outcomes, I examine relationships between BAZ, waist-to-height ratio (WHR), and nutritional practices (diet and physical activity). The only significant relationships in a series of ANOVA tests measuring the effect of diet on nutritional status and exercise on nutritional status outcomes are between BAZ and hours of exercise each week and BAZ and hours of television each week. Table 4-12 shows that students who exercise the most (five or more hours a week) have the highest BAZ and students who exercise less frequently have a lower BAZ, which is contrary to expectations as exercise is generally accepted as a means of weight loss ($F(118, 3) = 3.321, p = .022$). Meanwhile, students who watch television more frequently have a *lower* BAZ score than students who spend less time at sedentary activities, which is, again, unexpected since sedentary behaviors are generally associated with weight gain ($F(119, 3) = 4.648, p = .004$). In a univariate ANCOVA, gender does not significantly affect the relationship between BAZ and exercise ($F(3, 115) = 6.535, p = .079$) or hours of television ($F(1, 115) = .000, p = .079$) indicating that boys' nutritional status is not more or less affected by exercise or television watching than girls.

Table 4-12 BAZ and Amount of Exercise or Sedentary Activity each Day

		Mean BAZ	SD	N=
Exercise*	0	0.91	1.22	14
	1 to 2	0.38	1.33	27
	3 to 4	0.61	0.84	34
	5 or more	1.14	1	44
Sedentary Activities**	0	1.83	1.16	11
	1 to 2	1	0.99	34
	3 to 4	0.47	1.16	26
	5 or more	0.69	1.08	49

* (F (118, 3) = 3.321, p = .022) ** (F (119, 3) = 4.648, p = .004)

In conclusion, measures of short term nutrition via body composition outcomes (measured in BAZ, WHR, and BAZ obesity cutoffs) indicate that age and gender plays a significant role in shaping the levels of obesity in Belfast. More boys are obese than girls according to two different measures of obesity. However, it is unlikely that dietary practices are shaping these nutritional status outcomes as boys and girls appear to have relatively similar eating habits. Age, rather than gender, is the only factor shaping dietary habits since students eat a greater number of foods in various food groups as they get older. Unlike eating habits, exercise practices are significantly different between boys and girls where boys get more hours of physical activity each day than girls and girls spend more time at sedentary activities than boys. However, rather than shedding light on body composition outcomes, these different patterns of physical activity further convolute the picture as girls are less heavy, but also less active than boys. This indicates that age and gender may play a role in shaping the more immediate diet and exercise habits of adolescents in Belfast, but these habits may not have a significant influence on nutritional status outcomes in the long run and do not explain discrepancies in obesity between boys and girls. While other factors might be more important than the ones

discussed here, these factors will either be discussed later in this dissertation (or cannot be ascertained with the data that have been collected).

While age and gender shape the preferences and habits of teens in their daily lives, area of town and SES level speak to the consequences of deprivation on nutrition in the city, and demonstrate the multifaceted nature of nutrition especially in low income areas. Over-all, long-term nutritional discrepancies (measured in stature) are affected by SES level and the area of town in which students live. The data indicate that sample students living in areas with high rates of economic deprivation and people living in Catholic West Belfast have lower HAZ demonstrating that impoverished conditions in Belfast are having a negative effect on the nutrition of young people.

Different social locations can affect nutrition in different ways, but the more long-term consequences (measured in HAZ) are not behavioral in that they are shaped by socioeconomics and geography, but circumstantial in the form of neighborhood location in a city and poverty. I have demonstrated thus far the relationships between nutritional practices and outcomes in the sample population while determining the role that mitigating factors play in shaping these practices and outcomes. These data indicate that the factors shaping nutritional status must be more complex than diet and exercise habits alone. Diet and exercise do not differ significantly between income groups or geographic areas giving no indication that micronutrient deficiencies persist for these populations (though there is a chance they have existed in the past and are affecting current stature). Furthermore, the relationship between age, gender, and body composition are complex and expected patterns of healthy diet and exercise leading to healthier body weights is not seen since boys are both heavier and exercise more than girls. Perhaps the one

connection that is useful is that younger students are both heavier and tend to be pickier eaters with less dietary diversity, but dietary diversity does not significantly correlate with nutritional status outcomes in an ANCOVA test. In order to better understand the factors shaping nutrition in the community, I now delve further into the factors shaping nutrition in the sample population by weighing the strength of sociocultural influences on nutritional practices and outcomes.

Sociocultural Influences:

Aim 2, which seeks to examine the relationship between sociocultural influences, nutritional practices and nutritional status outcomes, is based on data from the questionnaire in which students rate the strength of influence that family, friends, teachers, television, community workers, and church leaders have on adolescent choices about food and exercise (Table 4-13). Sociocultural data are compared to diet and exercise practices from the questionnaire and to nutritional status outcomes from the anthropometric measuring day to identify relationships between sociocultural factors and nutritional practices and status outcomes.

The strength with which students rank the influence of family on diet and exercise practices is significantly related to age in the sample population where family becomes less of a priority as students get older ($\chi^2 (4) = 13.537, p = .009$) (See Table 4-13). There is also a significant relationship between age and the strength of the influence of friendship ($\chi^2 (4) = 21.380, p = .000$) where students indicate that their friends become less important as they get older. Age also plays a role in shaping the strength with which students rank teachers ($\chi^2 (4) = 12.394, p = .015$), such that the strength of teachers' influence on diet and exercise practices goes down as students get older. The strength of

television on influencing diet and exercise is also significantly related to the age of students ($\chi^2(4) = 15.175, p = .004$) where the strength of TV as an influence goes down as students get older (Table 4-13).

Table 4-14 shows sociocultural rankings by area of town and level of deprivation, but a series of chi-square tests revealed no significant relationships between area and sociocultural influences on diet and exercise practices or deprivation and sociocultural influences. Therefore, age plays the biggest role in shaping the rankings of sociocultural factors and students become less influenced by sociocultural factors as they get older.

Table 4-13 Frequency of Rankings for Sociocultural Influences by Age and Gender

Age		Family*		Friends**		Teacher*+		Youth Club		Church		Television+	
		Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
11 and 12	Boys n=19	7	12	7	12	14	5	11	8	16	3	9	10
	Girls n=31	5	26	16	12	24	7	23	8	28	2	22	8
13	Boys n=16	10	6	15	1	16	0	13	3	16	0	14	2
	Girls n=21	7	14	17	4	16	5	18	3	16	5	12	9
14	Boys n=16	12	4	15	1	15	0	14	1	13	2	14	1
	Girls n=39	16	23	22	17	38	1	32	7	37	1	28	10
15	Boys n=18	7	11	12	7	17	2	17	2	19	0	19	0
	Girls n=	15	9	19	5	21	3	22	2	23	0	17	6
16 & 17	Boys n=37	20	17	33	4	33	4	37	0	37	0	33	4
	Girls n=39	22	17	30	9	35	4	36	2	39	0	35	4

*($\chi^2(4) = 13.537, p = .009$); ** ($\chi^2(4) = 21.380, p = .000$); *+ ($\chi^2(4) = 12.394, p = .015$); + ($\chi^2(4) = 15.175, p = .004$)

Table 4-14 Frequency of Rankings for Sociocultural Influences by Area and SES

	Family		Friends		Teacher		TV		Youth Club		Church	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
West	82	90	124	47	154	18	138	32	147	24	163	7
North	19	24	34	9	38	5	37	6	39	4	41	2
East	2	6	3	4	5	3	6	2	5	3	8	0
South	5	3	5	3	6	2	5	3	6	2	7	1
Outside	5	11	10	6	14	2	12	4	15	1	15	1
	Family		Friends		Teacher		TV		Youth Club		Church	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
Low SES	79	92	121	49	153	18	137	32	147	23	163	7
High SES	34	41	54	20	64	11	60	15	65	10	70	4

Sociocultural influences are shaped by the age of the students in the sample, but what role, if any do these influences play in shaping diet and exercise practices in the sample population? There are a few significant relationships between sociocultural rankings and the number of portions consumed in a day according to a series of Mann-Whitney U nonparametric tests. Students who rank family as a high sociocultural influence on their diet and exercise choices eat more portions of fruit each day ($U = 6852.5, p = .002$). Teachers also play a role in shaping the dietary habits of their students since students who rank teachers as a high sociocultural influence eat more portions of vegetables ($U = 2831, p = .008$) and fruit ($U = 2962, 5, p = .041$) each day (See Table 4-15). There are no significant differences in the relationship between portion consumption and sociocultural influences when controlling for age and gender indicating that these relationships are not altered by social location. Fruit and vegetable consumption were the

only food groups significantly affected by teachers and families, which is why they are the only food groups present in Table 4-15.

Table 4-15 Frequencies of fruit and vegetable consumption by rankings for families and teachers

		Portions of Fruit				Portions of Vegetables			
		0	1 to 2	3 to 4	5 +	0	1 to 2	3 to 4	5 +
Family*	Low	5	79	27	8	8	81	31	1
	High	4	68	59	13	3	96	37	8
Teacher**	Low	9	132	75	15	11	160	56	6
	High	0	15	11	6	0	17	12	3

*($U = 6852.5, p = .002$); **Vegetables ($U = 2831, p = .008$) and fruit ($U = 2962.5, p = .041$)

Rankings of sociocultural influences also coincide with different levels of physical activity in the sample population. Students who rank family as a high sociocultural influence get more exercise each week than students who rank family as a low influence ($U = 7256, p = .024$). Gender has a significant effect on the relationship between the influence of family and hours of exercise where girls get more exercise when they rank family as a high priority. Youth club also plays a significant role in physical activity where students who rank youth club as a strong sociocultural influence get more exercise each week ($U = 3253, p = .026$) and watch less television than students who rank youth club as a lower influence ($U = 3472.0, p = .043$) (see Tables 4-16 and 4-17). Therefore, family, teachers and youth club all play a significant role in the diet and exercise practices of students in the sample population and have the capacity to shape student diets in positive ways.

Table 4- 16 Family influence on exercise choices by gender

		Hours of Exercise/day	Frequency	Percent
Family ranked as a low influence*	<i>Male</i>	0 Hours a day	4	7.0
		1 to 2 Hours a day	17	29.8
		3 to 4 Hours a day	13	22.8
		5 or more Hours a day	22	38.6
	<i>Female</i>	0 Hours a day	14	21.5
		1 to 2 Hours a day	21	32.3
		3 to 4 Hours a day	14	21.5
		5 or more Hours a day	15	23.1
Family ranked as high influence	<i>Male</i>	0 Hours a day	5	8.9
		1 to 2 Hours a day	10	17.9
		3 to 4 Hours a day	14	25.0
		5 or more Hours a day	25	44.6
	<i>Female</i>	0 Hours a day	8	8.9
		1 to 2 Hours a day	22	24.4
		3 to 4 Hours a day	28	31.1
		5 or more Hours a day	31	34.4

*($U = 7256, p = .024$)

Table 4-17 Influence of Youth Club on Hours of TV each week

	Hours of TV/week	Frequency	Percent
Youth Club ranked as a High Influence*	0 Hours TV a week	19	8.3
	1 to 2 Hours TV a week	58	25.3
	3 to 4 Hours TV a week	53	23.1
	5 or more Hours TV a Week	97	42.4
Youth Club Ranked as a Low Influence	0 Hours TV a week	5	13.2
	1 to 2 Hours TV a week	12	31.6
	3 to 4 Hours TV a week	12	31.6
	5 or more Hours TV a Week	9	23.7

*($U = 3472.0, p = .043$)

While sociocultural influences clearly shape diet and exercise practices in the sample population, these influences do not have significant relationships with anthropometric outcomes as indicated by a series of independent samples t-tests and

Univariate ANOVA tests where relationships are measured while controlling for age, gender, SES, and area of town. Therefore, the different dietary practices and sociocultural influences are not substantial enough to lead to significant changes in nutritional status outcomes in the sample population. From this, I conclude that changing nutritional status outcomes requires more than slight dietary changes and extends well beyond the reach of sociocultural influences on diet and exercise in Belfast. In chapters four and five I explore other factors that shape nutritional status outcomes such as the role that young people play in shaping their own nutrition and the role of the physical and cultural environment in shaping outcomes.

The findings in this chapter reinforce the findings of other biocultural anthropologists that nutritional status outcomes occur in a complex web of causation that is very difficult to untangle. Healthy behaviors, such as exercise, do not necessarily coincide with less heavy body sizes in the sample population indicating a complex relationship between diet, exercise, and nutritional status. Nutritional data from Belfast highlights the differences between factors that shape long-term malnutrition (area of town and SES) versus factors that shape short term dietary habits of young people (age, gender, and sociocultural influences). Many approaches to obesity in low-income, urban environments focus on the “obesogenic” aspects of the environment (Swidden, 1999). It is argued that by changing these aspects of the environment we can improve future health outcomes by reducing risk associated with disease (Birch, 2010). However, the data in this chapter show that merely rearranging the social environment would have very little effect on nutritional status outcomes in the end. Instead, there needs to be a better

understanding of the web of factors shaping outcomes and a reduction in poverty in urban places.

Chapter 5 Independence, Influence, and Sources of Nutritional Knowledge

This chapter focuses on the factors shaping short-term nutritional outcomes in Belfast, specifically examining factors that shape reactions and responses to high obesity rates among adolescents in the city. In the previous chapter, I established that obesity rates in Belfast are significantly higher than the WHO healthy reference mean, though outcomes differ significantly by age and gender. I also demonstrated that sociocultural factors such as age, gender, or sociocultural influence have a greater effect on adolescent diet and exercise practices than they do on nutritional status outcomes. Therefore, changes to the sociocultural environment might lead to changes in diet and exercise habits, but not necessarily to changes in levels of obesity within the community. In this chapter, I explore the lack of relationship between nutritional behaviors and nutritional status outcomes identified in chapter four by addressing Aims 3 and 4 of this dissertation, which focus on the relationships between adolescent nutrition, adolescent autonomy, and nutritional knowledge. To accomplish these aims, I examine the strength of sociocultural influences from the questionnaire along with food acquisition locations and sources of nutritional knowledge cited by students on the questionnaire.

One starting point for understanding the factors influencing adolescent nutrition is to examine the role that adolescents themselves play in shaping their nutritional practices and outcomes. Alexandra Brewis and Meredith Garten (2006) argue that children, through opposition to parental feeding strategies, shape their nutritional outcomes in negative ways that are often over-looked by public health practitioners. Focusing on children as autonomous actors in shaping their lives is a thread that has indeed been missing from much of the literature on childhood nutrition. While children do assert their

autonomy when it comes to diet and exercise, Allison James (2001) reminds us that children and adolescents occupy a unique social location in which full autonomy is very rarely a possibility since children's actions are guided by older members of their social groups. In this chapter, I build upon Brewis and Garten's insights into the role children play in shaping their nutritional status outcomes, but I temper this approach with an examination of the external influences that form adolescent nutritional practices.

In doing so, I examine whether autonomous food acquisition strategies, like buying foods at a shop or restaurant, or adherence to nutritional advice from adults significantly shapes adolescent nutrition in Belfast. This chapter is designed to be a biocultural critique of the obesogenic literature in which an emphasis is placed on evaluating body size as a health risk (e.g. for chronic diseases) caused by environmental limitations. Rather than accepting obesity as a risk and setting out to understand environmental factors associated with this risk, I build upon the work of Catherine Panter-Brick and Augustin Fuentes (2008) who undermine cause and effect approaches to risk. Panter-Brick and Fuentes discuss "risk narratives", which are

Story lines or discourses that weave together cultural and scientific accounts regarding the conceptualization and communication of health risks, or relative vulnerability to poor health, in personal lives, media reports, political directives, and expert accounts (4)

In other words, understanding so-called risk factors associated with biological outcomes is not enough. In order to truly perceive how outcomes are shaped and altered we must also account for the depictions and interpretations of this risk for adolescents in various social locations. The problem with translating risk into interventionist policies is that "we fall prey [...] to problematic generalizations" which can lead to "flawed policy or social marginalization" (Panter-Brick and Fuentes, 2008: 5). I argue that such a "flawed

policy” has inadvertently developed around fears of obesity in which adolescents have come to over-emphasize fatness and under-emphasize healthy eating messages.

To avoid the risk of building upon “flawed policies”, in this chapter and chapter 6, I examine how students develop food acquisition strategies and how they relate to nutritional knowledge. Food acquisition strategies and relationships to nutritional knowledge highlight the ways that adolescents receive and relate to messages about healthy eating in their community. In this chapter, I demonstrate that adolescents do play some role in shaping their diets, though they do not significantly shape their nutritional status outcomes. Influences from parents, teachers, family members, and community workers also shape diet in significant ways, though this does not directly shape nutritional status outcomes either.

Food Sources:

On the questionnaire (appendix A on page 175), students are asked where they get the foods they eat from each food group. They are asked to put a check mark next to all the places where they get their food. The choices include: 1) family, 2) bought for me at a shop, 3) school, 4) restaurant or take-away, 5) from a friend or at a friend’s house, 6) at youth club, 7) at church, or 8) other. Students can check all boxes that apply to their eating locations for each food group.

The most consistent location at which students eat is their homes or the homes of their family members. 95% (n = 259) of the students report eating dinner with their family on weekdays and 86% (n = 236) eat dinner at home on the weekends. However, there are significant differences in the frequency with which students of different ages eat at home. Table 5-1 also shows that, in a nonparametric test, students eat dinner at home

significantly more frequently as they get older (Kruskall Wallis: $x^2 (6) = 12.838, p = .046$). Despite the frequency with which they eat meals at home, students also report eating at school on a regular basis (either breakfast or lunch). 41% (n = 113) of the sample population eats at school at least one day a week and 35% (n = 96) eat a school meal every day of the week. With the exception of eleven year olds, younger students eat school meals at school every day more frequently than older students (Kruskall-Wallis non-parametric test) ($x^2 (6) = 13.426, p = .037$) (See Table 5-2).

Table 5-1 Frequency with which Students Eat Dinner with Family on Weekdays by Age

	Age*	Frequency	%
Male	11	3	100
	12	16	89
	13	13	77
	14	14	82
	15	19	100
	16	17	100
	17	19	95
Female	11	3	100
	12	29	100
	13	19	91
	14	37	95
	15	24	100
	16	21	96
	17	17	100

* $x^2 (6) = 12.838, p = .046$

Table 5-2 Frequency with which Students Eat at School by Age

Age*	Days at School	Freq	%
11	Never	0	0
	1 Day a week	1	17
	2 Days a week	1	17
	3Days a week	1	17
	4 Days a week	0	0
	Everyday	3	50
12	Never	8	17
	1 Day a week	5	10
	2 Days a week	3	6
	3Days a week	5	10
	4 Days a week	2	4
	Everyday	21	44

Table 5-2 Frequency with which Students Eat at School by Age (continued)

13	Never	8	21
	1 Day a week	4	11
	2 Days a week	3	8
	3Days a week	3	8
	4 Days a week	19	50
	Everyday	0	0
14	Never	11	20
	1 Day a week	8	14
	2 Days a week	6	11
	3Days a week	7	13
	4 Days a week	3	5
	Everyday	21	38
15	Never	19	44
	1 Day a week	3	7
	2 Days a week	3	7
	3Days a week	4	9
	4 Days a week	3	7
	Everyday	11	26
16	Never	14	36
	1 Day a week	3	8
	2 Days a week	4	10
	3Days a week	5	13
	4 Days a week	1	3
	Everyday	11	28
17	Never	13	35
	1 Day a week	6	16
	2 Days a week	4	11
	3Days a week	2	5
	4 Days a week	2	5
	Everyday	10	27

* ($\chi^2 (6) = 13.426, p = .037$)

Youth clubs, like homes and families, also have the potential to influence adolescent diets because they serve food to attendants at small canteens where they can buy drinks and snacks. Youth club is attended by 40% of the sample population during the week, with six percent of the students going four nights or more (Table 5-3).

However, younger students (11 to 13 year olds) are significantly more likely to attend youth club than older students (14 to 17 years) (Kruskall-Wallis nonparametric test) ($\chi^2 (6) = 30.614, p = .000$) (See Table 5-3). Youth club attendance has a significant effect on the diet of attendees because students who attend youth club more frequently

consume more non-water beverages than students who attend youth club less frequently ($\chi^2 (5) = 13.901, p = .016$) (See Table 5-4). Fizzy drinks and juices are frequently stocked at youth club canteens, and their presence is affecting the dietary habits of the students that attend youth clubs.

Table 5-3 Number of Evenings Attend Youth club Each Week*

		Freq.	Percent	Cumulative %
11	<i>Never</i>	2	33	0
	<i>1</i>	0	0	33
	<i>2</i>	1	17	50
	<i>3</i>	2	33	83
	<i>4</i>	1	17	100
	<i>5</i>	0	0	100
	<i>Everyday</i>	0	0	100
12	<i>Never</i>	20	42	42
	<i>1</i>	12	25	71
	<i>2</i>	6	13	84
	<i>3</i>	2	4	89
	<i>4</i>	3	6	96
	<i>5</i>	1	2	98
	<i>Everyday</i>	1	2	100
13	<i>Never</i>	14	37	37
	<i>1</i>	9	24	61
	<i>2</i>	6	16	77
	<i>3</i>	5	13	90
	<i>4</i>	4	11	100
	<i>5</i>	0	0	100
	<i>Everyday</i>	0	0	100
14	<i>Never</i>	36	64	64
	<i>1</i>	8	14	78
	<i>2</i>	8	14	92
	<i>3</i>	2	4	96
	<i>4</i>	1	2	98
	<i>5</i>	1	2	100
	<i>Everyday</i>	0	0	100
15	<i>Never</i>	27	63	63
	<i>1</i>	4	9	72
	<i>2</i>	3	7	79
	<i>3</i>	6	14	93
	<i>4</i>	1	2	95
	<i>5</i>	2	5	100
	<i>Everyday</i>	2	5	100
16	<i>Never</i>	27	69	69
	<i>1</i>	4	10	79
	<i>2</i>	1	3	82
	<i>3</i>	4	10	92
	<i>4</i>	2	5	97
	<i>5</i>	1	3	100
	<i>Everyday</i>	0	0	100

Table 5-3 Number of Evenings Attend Youth club Each Week* (continued)

17	<i>Never</i>	33	89	89
	<i>1</i>	3	8	97
	<i>2</i>	1	3	100
	<i>3</i>	0	0	100
	<i>4</i>	0	0	100
	<i>5</i>	0	0	100
	<i>Everyday</i>	0	0	100

*(χ^2 (6) = 30.614, $p = .000$)

Table 5-4 Consumption of Non-Water Beverages for Youth Club Attendees vs. Non-Youth Club Attendees*

Evenings per Week Attend Youth Club	Portions of Non-Water Beverages /Day	Freq	%
Never	<i>0 Portions</i>	9	6
	<i>1 to 2 Portions</i>	94	57
	<i>3 to 4 Portions</i>	46	28
	<i>5 or More Portions</i>	14	9
1 Night	<i>0 Portions</i>	2	5
	<i>1 to 2 Portions</i>	13	33
	<i>3 to 4 Portions</i>	19	48
	<i>5 or More Portions</i>	5	13
2 Nights	<i>0 Portions</i>	1	4
	<i>1 to 2 Portions</i>	10	37
	<i>3 to 4 Portions</i>	11	41
	<i>5 or More Portions</i>	5	19
3 Nights	<i>0 Portions</i>	3	14
	<i>1 to 2 Portions</i>	5	23
	<i>3 to 4 Portions</i>	8	36
	<i>5 or More Portions</i>	6	27
4 Nights	<i>0 Portions</i>	0	0
	<i>1 to 2 Portions</i>	5	42
	<i>3 to 4 Portions</i>	5	42
	<i>5 or More Portions</i>	2	17
5 Nights	<i>0 Portions</i>	0	0
	<i>1 to 2 Portions</i>	0	0
	<i>3 to 4 Portions</i>	2	100
	<i>5 or More Portions</i>	0	0

Table 5-4 Consumption of Non-Water Beverages for Youth Club Attendees vs. Non-Youth Club Attendees* (continued)

Everyday	<i>0 Portions</i>	0	0
	<i>1 to 2 Portions</i>	0	0
	<i>3 to 4 Portions</i>	1	33
	<i>5 or More Portions</i>	1	33

*(χ^2 (5) = 13.901, $p = .016$)

Examining the sources through which foods are obtained provides insight into the level of autonomy that students have over their diets. On the questionnaire, students were asked how frequently they buy foods for themselves in shops and at restaurants and take-aways. Students were also asked whether they get foods from different food groups from friends, family members, school, youth club, or other (write-in) sources. Analyses revealed that adolescents do have some influence in shaping their own diets but their diets are also shaped by outside sources. A series of Mann-Whitney, nonparametric tests reveal significant relationships between portions of foods and eating locations (see Table 5-5 for a break-down of eating locations and portions). Students who drink non-water beverages at youth club, drink significantly more portions of non-water beverages each day than other students ($U = 894.5$, $z = -4.397$, $p = .000$). Students who say that they get non-water beverages from friends or at a shop drink significantly more non-water beverages than students who do not get non-water beverages from a friend or at a friend's house, ($U = 4760.5$, $p = .015$) or at a shop, ($U = 5755.5$, $p = .041$). Therefore, non-water beverage consumption is elevated among students who buy them at a friend's house or shops. Students who report getting fried food and sweets from a youth club, a friend, and at restaurants and take-aways, eat significantly more portions of fried food and sweets than students that do not get these foods at a youth club, ($U = 653.5$, $p = .018$), friend's house, ($U = 4666.5$, $p = .000$), or a restaurant/take-away ($U = 5796$, $p = .010$) (Table 5-6).

Table 5-5 A Summary of Portions and Eating Locations

Eating Location/Food Source	Students who get foods at these locations eat more portions of the following:
Youth club	- More non-water beverages - More Fried Foods
Friend or Friend's House	- More non-water beverages - More Fried Foods -More Vegetables
Restaurant or take-away	- More Fried Foods -More Fruit
School	- More meat -More fruit
Shop	- More non- water - More Fruit

Table 5-6 Frequency of Consumption by Eating Location

Got Non-Water Beverage at Youth Club*	Portions per Day	Frequency	Percent
Yes	<i>0</i>	0	0
	<i>1 to 2</i>	1	6
	<i>3 to 4</i>	11	61
	<i>5 or More</i>	6	33
No	<i>0</i>	17	7
	<i>1 to 2</i>	127	50
	<i>3 to 4</i>	81	32
	<i>5 or More</i>	27	11

Got Non-Water Beverage at Shop**	Portions/day	Frequency	Percent
Yes	<i>0</i>	11	5
	<i>1 to 2</i>	92	46
	<i>3 to 4</i>	71	35
	<i>5 or More</i>	28	14
No	<i>0</i>	6	9
	<i>1 to 2</i>	36	51
	<i>3 to 4</i>	21	30
	<i>5 or More</i>	5	7

Got Non-Water Beverage from a Friend***	Portions/day	Frequency	Percent
Yes	<i>0</i>	0	0
	<i>1 to 2</i>	25	44
	<i>3 to 4</i>	21	37
	<i>5 or More</i>	10	18
No	<i>0</i>	17	8
	<i>1 to 2</i>	103	48
	<i>3 to 4</i>	71	33
	<i>5 or More</i>	23	11

Table 5-6 Frequency of Consumption by Eating Location (continued)

Got Fried Foods/Sweets at Youth Club*+	Portions/day	Frequency	Percent
Yes	<i>0</i>	0	0
	<i>1 to 2</i>	2	22
	<i>3 to 4</i>	6	67
	<i>5 or More</i>	1	11
No	<i>0</i>	5	2
	<i>1 to 2</i>	158	59
	<i>3 to 4</i>	78	29
	<i>5 or More</i>	23	9
Got fried foods/sweets from a Friend**+	Portions/day	Frequency	Percent
Yes	<i>0</i>	1	2
	<i>1 to 2</i>	25	40
	<i>3 to 4</i>	26	41
	<i>5 or More</i>	11	18
No	<i>0</i>	4	2
	<i>1 to 2</i>	135	64
	<i>3 to 4</i>	58	27
	<i>5 or More</i>	13	6
Got fried foods/sweets at a Restaurant+	Portions/day	Frequency	Percent
Yes	<i>0</i>	2	3
	<i>1 to 2</i>	32	44
	<i>3 to 4</i>	30	42
	<i>5 or More</i>	8	11
No	<i>0</i>	3	2
	<i>1 to 2</i>	128	63
	<i>3 to 4</i>	54	27
	<i>5 or More</i>	16	8

* U = 894.5, z = -4.397, p = .000; ** (U = 5755.5, p = .041); *** (U = 4760.5, p = .015); *+ (U = 653.5, p = .018); **+ (U = 4666.5, p = .000); + (U = 5796, p = .010)

Table 5-6 (above) also shows that students who get fruit from a shop, school, or a restaurant or take away eat significantly more portions each day than students who do not get fruit from a shop, (U = 5198, z = , p = .037), school, (U = 3412.5, z = , p = .002), and restaurant/take-aways, (U = 586, p = .008). Therefore, fruit consumption is higher among students who buy fruit at a shop, eat it at school, or get it in a restaurant or takeaway. Students who get vegetables from a friend or a friend's house eat more portions a day than students who do not get vegetables from a friend or at a friend's house, (U = 1876.5, p = .001). Meanwhile, the vast majority of students say they get fruit

and vegetables at home. Over 86% of the students who say that they eat at least one portion of fruit or vegetables a day say that they get fruit and vegetables from someone in their family or in their homes. Therefore, healthy food consumption goes up when students get fruit and vegetables in their homes or the homes of their friends.

A series of univariate ANCOVA tests reveals that age significantly affects the relationship between fruit consumption and eating location (see Table 5-7). Students who get fruit from their families eat less fruit as they get older ($F(260, 1) = 5.161, p = .024$). The same trend is true for students who get fruit from a shop ($F(260, 1) = 4.597, p = .033$), from school ($F(260, 1) = 3.972, p = .047$), a friend's house ($F(260, 1) = 4.679, p = .031$), and youth club ($F(260, 1) = 4.328, p = .038$). Therefore, age has a negative effect on fruit consumption when students get fruit from their families, in shops, at a friend's house, and at youth club, since the consumption of fruit goes down with age. This coincides with data discussed in chapter four showing that the strength of sociocultural influences lessens with age. No similar trends could be found for vegetable or fried food consumption by eating location when controlling for age or gender.

Table 5-7 Number of portions consumed by food group depicting differences by eating location

Age	Portions of Fruit	Get fruit from Family*		Get fruit from shop**		Get Fruit from School***		Get Fruit from a Friend*+		Get Fruit at Youth Club**+	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
11	<i>0</i>	2	0	1	1	0	2	0	2	0	2
	<i>1 to 2</i>	3	0	1	2	0	3	0	3	0	3
	<i>3 to 4</i>	1	0	0	1	0	1	0	1	0	1
	<i>5 or more</i>	0	0	0	0	0	0	0	0	0	0
12	<i>0</i>	0	1	0	1	0	1	0	1	0	1
	<i>1 to 2</i>	22	1	3	20	3	20	3	20	2	21
	<i>3 to 4</i>	13	7	7	13	5	15	1	19	0	20
	<i>5 or more</i>	3	1	1	3	0	4	0	4	0	4
13	<i>0</i>	1	0	0	1	0	1	1	0	0	1
	<i>1 to 2</i>	15	3	2	16	5	13	4	14	0	18
	<i>3 to 4</i>	14	2	3	13	3	13	3	13	0	16
	<i>5 or more</i>	2	0	0	2	0	2	0	2	0	2

Table 5-7 Number of portions consumed by food group depicting differences by eating location (continued)

14	0	1	2	1	2	0	3	0	3	0	3
	1 to 2	26	7	7	26	3	30	4	29	0	33
	3 to 4	11	3	4	10	5	9	2	12	1	13
	5 or More	5	0	3	2	4	1	1	4	1	4
15	0	1	0	0	1	0	1	0	1	0	1
	1 to 2	21	3	4	20	4	20	4	20	0	24
	3 to 4	14	1	1	14	2	13	0	15	2	13
	5 or more	3	0	2	1	1	2	1	2	0	3
16	0	1	1	0	2	0	2	0	2	0	2
	1 to 2	20	1	8	13	0	21	2	19	0	21
	3 to 4	9	1	2	8	2	8	0	10	0	10
	5 or more	4	0	2	2	0	4	1	3	1	3
17	0	0	0	0	0	0	0	0	0	0	0
	1 to 2	26	3	7	22	3	26	1	28	0	29
	3 to 4	6	0	0	6	2	4	0	6	0	6
	5 or more	2	0	0	2	0	2	0	2	0	2

*($F(260, 1) = 5.161, p = .024$); ** ($F(260, 1) = 4.597, p = .033$); *** ($F(260, 1) = 3.972, p = .047$); *+ $F(260, 1) = 4.679, p = .031$); **+ ($F(260, 1) = 4.328, p = .038$).

As has been demonstrated, food acquisition shapes diet. There is also one significant relationship between food sources and adolescent nutritional status outcomes in the sample population. In an independent samples t-test, students who get vegetables at home have a higher BAZ (mean = .913) than students who say they do not get vegetables at home (mean = .324) ($t(120) = 2.036, p = .044$). T-tests reveal no further significant connections between any measure of nutritional status and the frequency with which students eat school meals, at a friend's house, at youth club, or from a restaurant or take-away. Even when BAZ is affected by vegetable consumption at home, the results are, perhaps, counter-intuitive since increased vegetable consumption is associated with heavier students. Univariate ANCOVA analyses reveal that age, gender, SES, and area of town do not significantly shape relationships between nutritional status and eating location. This indicates that changes to eating location would likely have a stronger effect on dietary practices than nutritional status outcomes. The limited connections

between eating location and nutritional status outcomes could be the result of the self-reported data and should be examined further in future research.

Food acquisition locations, specifically shops and restaurants, demonstrate that adolescent autonomy does have some effect on adolescent diets as they increase fried food, fruit, and non-water beverage consumption. Students who say that they get non-water beverages from a shop drink significantly more non-water beverages than students who do not get non-water beverages from a shop, ($U = 5755.5$, $z = .041$) (Table 5-8). Students who report getting fried food and sweets at restaurants and take-aways, eat significantly more portions of fried food and sweets than students who do not get these foods at a restaurant/take-away ($U = 5796$, $p = .010$) (Table 5-9). Students who say that they get fruit from a shop or a restaurant or take away eat significantly more portions each day than students who say they do not get fruit from a shop, ($U = 5198$, $p = .037$), or restaurant/take-aways, ($U = 586$, $p = .008$) (Table 5-10).

Univariate ANCOVA analyses are used to determine whether consumption by eating location is altered when controlling for age and gender. These tests show that the relationship between fruit consumption and buying fruit at a shop is positively affected by age. This means that older students eat more portions of fruit when they buy fruit for themselves at a shop than do younger students. The same is true for students who buy non-water beverages at a shop. Consumption of non-water beverages increases with age when non-water beverages are bought at a shop.

Table 5-8 Portions of Non-Water when Bought at a Shop*

Bought Non-Water Beverages at a Shop	Portions of Non-Water a Day	Frequency	%
Yes	<i>0 Portions a Day</i>	11	5
	<i>1 to 2 Portions a Day</i>	92	46
	<i>3 to 4 Portions a Day</i>	71	35
	<i>5 or More Portions a Day</i>	28	14
No	<i>0 Portions a Day</i>	6	9
	<i>1 to 2 Portions a Day</i>	36	51
	<i>3 to 4 Portions a Day</i>	21	30
	<i>5 or More Portions a Day</i>	5	7

* U = 5755.5, p = .041

Table 5-9 Portions of Fried Foods and Sweets when Bought at a Restaurant or Take-away*

Buy fried foods or sweets at a restaurant or take-away?	Portions of fried foods and sweets a day	Frequency	%
Yes	<i>0 Portions a Day</i>	2	3
	<i>1 to 2 Portions a Day</i>	32	44
	<i>3 to 4 Portions a Day</i>	30	42
	<i>5 or More Portions a Day</i>	8	11
No	<i>0 Portions a Day</i>	3	2
	<i>1 to 2 Portions a Day</i>	128	63
	<i>3 to 4 Portions a Day</i>	54	26
	<i>5 or More Portions a Day</i>	16	8

* U = 5796, p = .010

Table 5-10 Portions of Fruit when Bought in a Restaurant or Take-away*

Got fruit at a restaurant or take-away	Portions of Fruit a day	Frequency	%
Yes	<i>0 Portions</i>	0	0
	<i>1 to 2 portions</i>	3	33
	<i>3 to 4 portions</i>	3	33
	<i>5 or more portions</i>	3	33
No	<i>0 Portions a Day</i>	9	3
	<i>1 to 2 portions</i>	150	56
	<i>3 to 4 portions</i>	83	31
	<i>5 or more portions</i>	18	7

* U = 586, p = .008

Purchasing foods at a shop or restaurant/take-away provides a measure of adolescent autonomy over their own diets since explained to me in interviews that they frequently visit shops or takeaways while out with their friends or walking to school.

However, univariate ANOVA analyses reveal no significant relationships between BAZ or WHR and buying foods at shops or restaurant/take-aways. ANCOVA analyses reveal that relationships between autonomous food acquisitions and BAZ or WHR do not differ significantly when controlling for age, gender, SES, and area of town. Therefore, there is no direct evidence from the data supplied by the questionnaire or anthropometric survey that students play a role in shaping their own biology even though they do play a role in shaping their diets. This undermines Brewis and Garten's discussion of children as "architects of their own biologies" since autonomy over diet and exercise does not necessarily play a significant role in shaping biological outcomes (*i.e.* body composition).

In summary, food sources do not play a central role in shaping body composition outcomes in the sample population. This chapter also confirms that adolescents are in fact playing a role in shaping their own nutrition through the acquisition of foods from shops and restaurants/take-aways. Again, however, the role of adolescents has an effect on diet but not nutritional status outcomes. This chapter further reinforces that the processes shaping obesity for adolescents are multi-faceted and complex. In the next chapter, I examine the relationship between students in the sample population and nutritional knowledge to further discuss the factors shaping both nutrition and nutritional status in Belfast.

Chapter 6: Sources of Nutritional Information:

While food acquisition provides additional information about the types of foods that young people eat, it does not fully explain how and why adolescents make the nutritional choices that they make. In this chapter, an examination of the sources from which students acquire nutritional information clarifies the information that students have when they make decisions about what to eat or how much to exercise. Sources of nutritional information play a role in shaping how adolescents view their nutritional lives and can have the potential to affect their diet, exercise, and nutritional status outcomes. The most significant sources of nutritional information for young people in the sample population are school, family, and media sources (Table 6-1). In this chapter, I demonstrate that students receive a variety of nutritional information from different sources. However, I argue that, in Belfast, healthy nutrition has become conflated with thin body size and unhealthy eating habits conflated with higher body weights. In reality, however, body size does not inherently reflect the diet of an individual as directly as is often assumed (as seen in chapter 4).

A focus on the relationship between individuals and the knowledge to which they are exposed is drawn from the book *Anthropology of Food* by Johann Pottier (1999). Pottier makes connections between nutritional policies and “complex real-life experiences”. He asks questions about the ways that people relate to the knowledge they receive from government or policy sponsored efforts to improve nutrition. This is particularly relevant in the field of adolescent obesity where a highly visible outcome, obesity, has fueled attempts to disseminate knowledge, thus increasing the need to investigate how this knowledge permeates groups and how individuals process and

internalize different parts of this knowledge. Pottier reminds us that: “The challenge is to appreciate how the different actors involved...negotiate outcomes” and therefore, how new knowledge becomes a part of this negotiation rather than replaces existing interactions with the world (5).

Table 6-1 Sources of Nutritional Knowledge

Where do you learn about healthy eating and exercise?	Number of Responses
School	177
Family	114
Media	76
Sports	40
Other	47

School:

In the write-in section of the questionnaire, 177 out of 275 students say that they learn about healthy eating in school, making “school” the most frequent response to this question. Stella, a twelve year old girl in her second year at Meánscoil Béal Feirste sums up the things she learns at school during an interview:

[In school] you’re more likely to learn about health like the proper food that you have to eat and the kind of exercise that you should do and not too much food and we’re doing science too and it’s telling us like what to eat with protein and carbohydrates (Stella, interview, April 2011)

Peter, a third year at Meánscoil Béal Feirste says that his Home Economics teacher, Mairead, teaches students about “preparing the food and all that” while David, the P.E teacher is “talking about our body and healthy eating and all that we should be doing and shouldn’t be” (Peter, interview, April 2011). Bronagh, a first year student, explains that she learns about the ingredients in food and also what food is made of (chemicals) and how food interacts with their bodies.

However, learning information at school does not mean students follow the advice as it is offered. I asked the thirty-two students who participated in interviews, whether they follow the nutrition advice they receive. Nine out of the sixteen students who say that they get nutritional information at schools say that they try to follow advice from teachers, but the advice does not always match the reality of their situation. For example, Laura, a very animated 14 year old girl explains that it is difficult to follow the advice she gets at school because she just eats whatever food is around when she is hungry, and she cannot always plan to eat healthy foods. Meanwhile, Mark, an athletic sixteen-year-old says that he follows advice, but sometimes his preferences cause him to diverge:

Sometimes I follow just depends on myself really. On the healthy eating tips that [the Home Economics teacher] Mairead gives us, I sort of follow that all the time like I try to drink the water and I don't skip breakfast and fruit and veg I always try to eat 5 a day but I like sweets as well (Mark, Interview, April 2011)

Other students indicate that preferences for unhealthy foods, time constraints, and the need to eat food on the go interfere with advice that they get in school. Therefore, students are exposed to a healthy eating curriculum at school, yet many treat it as the standard of what they “should do” and whether or not they feel this advice fits the reality of their lives is questionable. Therefore, students are in a position where they have to negotiate between the nutritional advice that they get at school and the multiple aspects of their lives that do not facilitate the implementation of this advice.

Nutritional information in schools comes from a curriculum that is developed by the Northern Irish Department of Education, and implemented at Meánscoil Béal Feirste by the Belfast Education and Library Board. The nutrition curriculum for secondary schools is divided into four levels: Key Stage three (ages eleven to fourteen), Key Stage four (ages fifteen and sixteen), sixth form, which includes year (aka grade) thirteen (ages

sixteen to seventeen) and year fourteen (ages seventeen to eighteen). Students learn about healthy diets, grocery shopping, cooking, and exercise in Home Economics and sciences classes as well as in their weekly physical education classes.

Northern Irish curricula for Physical Education and Home Economics have both statutory elements (those that are required) and non-statutory (those that are recommended but not required). David, the PE teacher helped me understand how Meánscoil Béal Feirste implements a nutrition curriculum:

We have a thematic approach to education...where every child not only learns through different subjects but they also learn a connective theme that they carry from subject to subject and one of those themes is healthy living. We try to as best we can help the pupils see what healthy living means from different subjects (David Interview, May 2011)

This thematic approach to healthy living is aimed at the youngest students in the school between the ages of eleven and thirteen. Older students earning college-track credits in GCSE and A-level classes have a less thematic exposure to nutrition, but certain subjects such as P.E. and Home Economics maintain a nutritional emphasis in their curricula.

During my time at Meánscoil Béal Feirste, I observed PE classes and interviewed the head PE teacher who highlights the dedication of the PE faculty to the nutrition curriculum despite funding constraints in the school. The PE facilities at Meánscoil Béal Feirste are limited to use of an assembly hall (unless the hall is used for testing or visiting speakers). The assembly hall is large and has a roped obstacle course along the walls. However, all other equipment is temporary as the assembly hall must be cleared after each class. This makes it difficult for the PE teachers to implement a consistent curriculum for students. Although UK education standards require that all students have a minimum of two hours practical PE time each week, Meánscoil Béal Feirste cannot

accommodate this for all age groups due to limited activity spaces in the school and curriculum related time constraints.

The students at Meánscoil Béal Feirste get one hour of P.E. each week, which includes both practical (exercise and games) and theoretical (nutrition and fitness) lessons. David explains that throughout the school term, PE teachers break the PE courses down into different sports themes. For example, during the first several weeks they might do football related activities and then, two weeks later, they shift focus to hurling followed by aerobics. P.E. teachers base their courses on state devised curricula.

David, a PE teacher at Meánscoil Béal Feirste explains:

well the curriculum at key stage 3 which is 11 year old to 14 year old there's a lot more flexibility there to deliver things like thematic teaching where they're no sort of final exam, you can be more flexible. But the GCSE and the A-level you have to deliver, you have to cover the specialization content. To ensure that the children are as prepared as possible for the exam, so it seems to be more exam based at the GCSE and A-level whereas at key stage 3, which is good because it's kind of that transition stage from primary to post-primary, there's more room for maneuver and flexibility to deliver in our own particular way, but the pupils have to get their basics in terms of literacy and numeracy, that has to be instilled.

The PE teachers have a bit of flexibility but also must ensure that key themes are instilled through their lessons for younger students and that older students engage with materials that appear on GCSE and A-level exams. This can be difficult at Meánscoil Béal Feirste, since the Northern Irish government has been slow to translate course materials into Irish.

David goes on to say:

Well because we teach through the medium of Irish, we're dependent on the state to translate English materials for us because if we're following state set exams, you know, we need the state to provide us with the textbooks and the schemes which are already available in the English schools so we've had a little bit of trouble in the last couple of years to get all those texts translated. In the early days, I'll just show you, in the early days we the teachers had to produce their own materials to teach. So here's an example of a book that I made for them on PE to deliver the curriculum, the state curriculum. Now after a bit of pressure, only last week, now I'm teaching here 12 years, and I've been teaching this course now 10 years and only last week the state has delivered the text which was available to every English speaking school for the last 10 years.

They've only provided us with the latest model of it so slowly but surely we're getting there.

It is evident that the PE curriculum has been built by dedicated teachers and yet students must meet state standards for their exams. This shows the difficulty that PE teachers at the college face along with limited gym space and teaching materials. However, the emphasis that students place on school as a source of nutritional knowledge indicates that messages are still getting through despite constraints.

Along with PE, Home Economics is another subject that emphasizes nutrition in its curriculum. Mairead is the Home Economics teacher at Meánscoil Béal Feirste. She teaches students about a healthy diet and nutrition and how to shop for food and make a budget. She also does practical lessons in which students get to cook foods and then eat them. The cooking classes take place in a room that has several ovens, sinks, and large tables where students can prepare ingredients. On the day that I visit Mairead's classroom, the children were making kebabs with chicken and vegetables. I arrived just as they are taking them out of the oven. Mairead wrapped the kebabs in foil so that the students could take the food with them and eat them at lunch or snack time. Some of the kebabs had only chicken, but Mairead and her classroom assistant encouraged many of the students to try onions and peppers as well. One of the students said this is his first time ever trying an onion.

Home Economics falls under the "Learning for Life and Work" curriculum category in Northern Ireland. Other subjects in this category include employability, citizenship, and personal development. In Key Stage three there are three key concepts in Home Ec including healthy eating, home and family life, and independent living. In focusing on nutrition, the students are expected to learn how to prepare and cook food,

how to safely use a variety of cooking utensils, how to safely store foods, and learn what constitutes a healthy diet (DOE, 2011).

School food environments in the UK have been connected with positive changes to diet and exercise practices among students (Sahota, 2001), and school food service in the UK is generally held to strict healthy standards. However schools in low socioeconomic areas can have lower adherence to food standards than schools in more affluent areas and this has been correlated with a decreased consumption of healthy foods (Gould, 2006; Townsend, 2012). Although Meánscoil Béal Feirste is in a lower socioeconomic environment, they prioritize school meals standards in their lunchroom, as well as their classrooms. The head of their canteen staff, Paula, indicated that she is able to keep within her monthly budget even though it can be difficult. When I asked if she had difficulty meeting healthy standards set by the school board, Paula replied:

It's hard enough to keep our budget cause we have a certain budget that we're allowed to spend and it's hard enough to keep into that so it is. But no at the end of the day this is the thing we have to keep our healthy eating goal for our children

Paula, therefore, is able to adhere to the healthy standards despite the difficulties of staying within a budget and the BELB enforces it strictly so they have few options but to comply.

Questionnaire data from Meánscoil Béal Feirste show that some aspects of the school environment do directly shape the nutritional practices of students. Students who eat lunch at school every day eat significantly more vegetables than students who eat school lunch less frequently (Kruskall-Wallis test: $\chi^2(5) = 12.099$, $p = .033$). However, there are no significant relationships between school and nutritional status outcomes in the sample population. Therefore, school has some impact on vegetable consumption but

does not coincide with less obesity or healthier nutritional status outcomes. It is clear that the college offers a holistic repertoire of nutrition messages that are picked up by students, but these messages do not necessarily result in exceedingly healthier diet or nutritional status outcomes for students.

Home:

After school, home and families are the second most frequently cited source of nutritional information (144 out of 275 students in the questionnaire sample population wrote-in that they learn about nutrition from family or at home). Parents are often portrayed by community and school workers as lacking nutritional knowledge and establishing poor standards for their children when it comes to healthy living.

Professionals working with young people say that these young people come to them lacking knowledge about health and well-being. However, children speak of their families as a central factor shaping their nutritional choices in positive ways, indicating that many homes are emphasizing nutrition for their children. I asked 32 adolescents in the sample population several questions in interviews related to their family food experiences.

17 of the 32 students who participated in interviews said they get nutritional advice from family members and eleven of these students elaborated that this advice pushes them to make healthy decisions. A great deal of adolescent food consumption occurs with families, as nearly all children eat dinner with their families on weekdays (94% of the questionnaire sample) and on weekends (86%). Therefore, home-life is well poised to play a pivotal role in the nutrition of young people, making it all the more

significant that so many adolescents in the sample population cited home as a source of nutritional knowledge and advice.

Homes do have a significant impact on what adolescents in the sample population are eating and the types of activities in which they engage. Questionnaire data from the sample population at Meánscoil Béal Feirste shows that students who eat dinner at home on weekdays eat fewer portions of fried food and sweets in Mann-Whitney U nonparametric test ($U = 1215, p = .006$) and watch less television ($U = 1266.5, p = .019$) than students who do not eat dinner at home regularly on weekdays. As noted previously, Students who rank family as a strong influence on their diet and exercise eat more vegetables than students who rank their family lower on the likert scale ($U = 6852.5, p = .002$) (See Table 6-2). Eating with family can even affect nutritional status outcomes since students who eat at home more often on the weekends have lower BAZ scores. Therefore, family is a source of nutritional information for students at Meánscoil Béal Feirste and this information appears to be a generally healthy influence. Families play a positive role in shaping vegetable consumption and reducing fried food and sweets in student diets despite concerns about poor parental feeding strategies expressed by community workers and teachers².

² Note on this section: While student responses made it very clear that family plays an important role in shaping their nutritional knowledge, my time with families was extremely limited. This section provides the data that I was able to collect on families from student interviews and questionnaires; however, more research is needed on this aspect of adolescent life in Belfast.

Table 6-2 Diet and Exercise Data as influenced by Family

Eating Dinner with Families on Weekdays and Portions of Fried Foods/Sweets

Eat Dinner with Family- Weeknights	Portions of Fried Foods/Sweets*	Freq	%	Cumulative %
Yes	0	5	2	2
	1 to 2	154	60	62
	3 to 4	79	31	93
	5 or More	19	7	100
No	0	0	0	0
	1 to 2	5	33	33
	3 to 4	5	33	67
	5 or More	5	33	100

Hours of Television and Dinner with Family on Weekdays

Eat Dinner with family during the week	Hours of Television Each Day**	Freq	%	Cumulative %
Yes	0	26	10	10.1
	1 to 2	68	26	36.6
	3 to 4	64	25	61.5
	5 or More	99	38	100.0
No	0	0	0	0
	1 to 2	3	20	20.0
	3 to 4	1	7	26.7
	5 or More	11	73	100.0

Ranking of Family as a Sociocultural Influence and Portions of Vegetables each Day

Ranking: Family as an influence on diet/exercise	Portions of Vegetables Each Day***	Freq.	%	Cumulative %
Low	0	8	7	7
	1 to 2	81	66	74
	3 to 4	31	25	99
	5 or More	1	1	100
High	0	3	2	2
	1 to 2	96	66	69
	3 to 4	37	25	94
	5 or More	8	6	100

*($U = 1215, p = .006$); ** ($U = 1266.5, p = .019$); *** ($U = 6852.5, p = .002$)

Media Sources:

While home and school clearly played a role in shaping adolescent attitudes and actions, the role of media played a role in nutrition as well. The remainder of this chapter

is dedicated to examining the role that media outlets play in shaping nutritional attitudes and behaviors and links negative portrayals of obesity by media outlets to a fear of obesity among students in the community. Seventy-six students said that they learn about diet and exercise from television, the internet, and books. The majority of young people who cited media as sources of learning on the questionnaire said that they learn from television (n=62). Students often discussed TV shows about nutrition in casual conversations and interviews, and the shows mentioned by four students in interviews are *Embarrassing Fat Bodies* and *Supersize vs. Super-Skinny*. Both of these shows discuss the problems with weight gain and suggest diet and exercise regimens that help participants lose weight. *Super-size vs. Super-Skinny* also includes the dangers of under-eating.

Young people also said they got advice from televised advertisements that encourage healthy eating, or, as one student said: “relentless advertising campaigns” about diet and exercise (student response, questionnaire). Some advertisements came from the Change4Life campaign which features several different commercials on the BBC channels. Change4Life is a government sponsored campaign to encourage young people to eat healthier and exercise more. Along with shows and commercials, some young people said that they or their family get information and recipe ideas from cooking shows on TV, from celebrity chefs like Nigella Lawson or Jamie Oliver.

When asked what they learn from TV, a 17 year old girl named Colleen said that she learns how obesity impacts your health and that “you can get all sorts of diseases”.

Mechal, a 16 year old boy said:

It depends on what you'd be watching. Some TV shows they don't teach you but they show you the effects of unhealthy eating and make you want to change

almost like your peers. TV characters make you want to change and be like them (Mechal, interview, April, 2010)

This boy made the important distinction between shows speaking directly about diet and exercise compared to television actors who influence body image. Aoife, an 11 year old girl pointed out the other extreme. She said that television encouraged her to follow the healthy eating advice from her parents and teachers by showing images of obese people because she did not want to become like the people she sees on TV.

Some shows like *Embarrassing Fat Bodies* attempt to educate but are more about shock value. In this show, people who are currently struggling with or overcoming severe weight problems visit with the show's doctors. After discussing their weight issues with the doctor, the patients are asked to undress while the doctor inspects them and points out problem areas to the viewers at home. Most of the people on the show qualify for some variety of cosmetic surgery, which is shown in graphic detail as well. In the end, the show follows up with the patients to see if they are satisfied with the results of their weight loss treatment and whether they have kept the weight off.

Embarrassing Fat Bodies is, perhaps, one of the more sensationalized programs about diet and weight-loss, but there are other shows about obesity, nutrition, or weight-loss on TV. One show that young people bring up in interviews is called *Super-size vs. Super-Skinny*. This show features two people, one who overeats and one who under eats and puts them in the same home. The under-eater and the over-eater then switch diets for the week. The over-eater is asked to limit his or her diet to whatever the under-eating counter-part consumes in a normal day, and the under-eater is asked to eat the very large portions and snacks from the over-eater. The purpose of the show is to make each individual "address [his or her] dangerous eating habits" (show introduction, BBC, 2010).

While the two participants struggle to adjust to their new diet, the host of *Super Size vs. Super Skinny* gives tips about diets and talks about the health problems associated with under-eating (iron deficiency, fatigue, skipped periods, brittle hair, wrinkles) and over-eating (obesity, death, diabetes). Some of the healthy eating tips from the show include not skipping breakfast, planning meals ahead of time to ensure you have healthy foods around, eating small snacks preferably of fruit, and not over-eating. The host of the show even tries different fad diets to see if they work. While the diet switching is rather extreme, the show is less sensational than *Embarrassing Fat Bodies* because they discuss the lessons that each participant learns, highlight unhealthy diet habits for under and overeaters, and discuss why these individuals fell into these patterns in the first place. Despite some odd antics, the message of the show seems to strive for healthier attitudes towards diet and exercise and the results focus on healthy eating habits rather than extreme weight-loss or gain.

Of course television has long been connected to nutritional concerns in industrialized, urban places. However, much of the academic literature focuses on television viewing as a sedentary activity that promotes obesity in children and adolescents. For example, television is correlated with limited exercise for adolescents (Boynton-Jarrett, 2003). Other academics are concerned that thin celebrities lead to unrealistic expectations of body size in real life and can lead to eating disorders (Bordo, 2004). There are also concerns that advertising for unhealthy foods and drinks on television leads children to desire less healthy foods (Harris, 2009). However, a theme that arose in my own research is centered on the types of nutrition messages adolescents get from television and other media sources. Television programs focusing on obesity

and government sponsored commercial campaigns show that television is not completely over-run with subtle impressions of thinness nor is it merely a distraction that causes weight gain. Instead, television is also deeply embroiled in the discussion about obesity in the UK, and these negative and sensationalized images of obesity can be correlated with attitudes towards nutrition and obesity among young people in the sample population.

As I will discuss in detail later in this chapter, television affects adolescents' attitudes towards obesity more than they shape their diet and exercise practices. In a nonparametric test, increased television viewing is correlated with more limited fruit consumption $\chi^2 (3) = 8.89, p = .031$ suggesting that television viewing may have some influence on diet, but there are no other connections between hours of television viewing, strength of television as an influence, and nutritional practices or outcomes. Therefore, the images on television play a less direct role in the diet and exercise practices of adolescents at Meánscoil Béal Feirste. However, I argue that television plays a central role in shaping when and how students prioritize nutritional advice. Interviews with teachers and students reveal that obesity is not a central focus on the nutrition curriculum at schools and no students mentioned that their parents discuss obesity with them. However, as I will demonstrate, negative ideas about obesity resemble sensationalized television shows and lead to negative feelings towards larger body sizes since they focus on severe outcomes (death and physical abnormalities) rather than diet and exercise.

While negative feelings about obesity abound in Belfast, students do not necessarily avoid unhealthy foods. 98% (n =272) of the sample population say that they eat one serving or more of fried foods and sweets each day. This discrepancy is perhaps

hard to reconcile, but Mimi Nichter (1999) in her book *Fat Talk* argues that there is a struggle in adolescence in which personal freedom is highly valued and yet there is some recognition that peers and friends can lose control because of this freedom. Nichter writes:

Not being able to control a food addiction was a sign of personal weakness. Interestingly, similar ideas emerged in interviews with teens about smoking. Whereas it was cool and 'kinda fun' to smoke, it was *not* cool to be addicted to cigarettes. In keeping with notions of adolescent independence girls projected the image that they should be able to control their smoking, rather than have their smoking control them. Similarly a girl shouldn't let her desire for food control her. Being overweight was a clear signal that she was out of control (42)

Nichter argues that the notion of personal control is critical and fatness is a sign that an individual has lost control and abused their freedoms or failed to incorporate known limits into their diet and exercise habits. Nichter goes on to argue that young people are more likely to “watch their weight” than to diet indicating that weight management is a constant and on-going endeavor for teens who want to avoid putting on fat. Nichter's views resonate with my own findings in Belfast where increased body weights trigger a negative response and are associated with a loss of personal control.

Over-all, obesity and fatness are viewed negatively by young people in West Belfast. Weight gain and obesity became a central theme in my research because young people constantly brought up the negative consequences of weight gain that result from poor nutritional practices. These attitudes towards obesity came across in the questionnaire. On the final page of the questionnaire, I asked students to write in responses describing whether they feel that a healthy diet and exercise are important for young people, and the majority of the students said that it is important to avoid gaining weight, to avoid becoming “fat”. The language of these remarks is particularly interesting. Responses like “one day everyone will be fat!!!!” and “I think it should due

to FAT PEOPLE” and “yes you might turn out really fat” exemplify the attitude that fat is something to avoid and that fatness is an extreme condition to which all young people are susceptible.

One of the most striking themes to arise during interviews and casual conversations with students and in analyzing the questionnaire is the connection that students made between nutrition and fatness. Despite efforts by schools, families, and other aspects of the community to encourage healthy choices about diet and exercise, fatness was prominent in conversations about nutrition. Questionnaire and interview questions did not explicitly focus on fatness or obesity; in fact, the topic was purposefully avoided so that I could concentrate on diet and exercise patterns. However, students brought it up constantly, almost always in negative ways. One of my first encounters with this phenomenon happened while administering the questionnaire at Meánscoil Béal Feirste. A young girl in her first year stopped filling out the questionnaire and raised her hand, saying in a joking way that she did not want to fill out the questionnaire because her answers about diet and exercise would make me think that she is obese when she is not.

This connection between body size and nutrition might have numerous consequences for young people in the community including self-consciousness about weight. However, the aspect with which I am most concerned is that nutrition advice has been superseded by concerns with obesity; and, therefore, healthy living advice is only deemed applicable in cases where individuals are putting on weight or losing too much weight. As one student put it on the questionnaire “[nutrition should not be a priority for teenagers] but if your [*sic*] fat I would try to eat nutritious”. Another student explained

that nutrition does not need to be a priority for young people her age because she eats junk food and “is not fat”.

The emphasis on body size is affecting the ways that young people described their diet and exercise patterns. As indicated in Table 6.3, fruit and vegetable consumption was reported to be higher and sweet/fried food consumption reported to be lower among students who were heavier. While these differences are not significant the findings are contrary to expectations in that students who reported eating less fruit and vegetables fall in the “healthy” BAZ range while students who said they eat 5 or more portions per day were in the “overweight” range. Meanwhile students who said they eat 0 portions of fried foods and sweets fell into the “overweight” category while students who said they eat 1 or more portions of fried foods and sweets per day were in the “healthy” BAZ range (See Table 5-14). In Belfast, “healthy” diets might not correspond directly with nutritional status outcomes (as seen in Chapter 4) and the data discussed here work to further question the relationship between diet and nutritional status by indicating that healthy diets are not definitively correlated with “healthy” nutritional status outcomes. Future research using more refined nutritional assessments could be used to confirm or deny a relationship between self-reported healthy eating, actual diets, and nutritional status outcomes.

Table 6-3 Number of Portions of vegetable, fruit, and fried food/sweets consumed each day vs. mean BMI

Portions	Mean BAZ (Portions Veg per day)*	Mean BAZ (Portions Fruit per day)**	Mean BAZ (Portions Fried Food/Sweets per day)*+
0	.646	.417	1.37
1 to 2	.778	.788	.876
3 to 4	.914	.832	.826
5 or More	1.27	1.11	.544

*Differences not significant in a one-way ANOVA: $F(119, 3) = .703, p = .552$

**Differences not significant in a one-way ANOVA: $F(116, 3) = .373, p = .733$

+ Differences not significant in a one-way ANOVA: $F(118, 3) = .433, p = .730$

Two students at Meánscoil Béal Feirste- Paul and Bronagh- exemplify the pressure put on young people who feel they are overweight. Paul and Bronagh both express concerns with their weight and describe how it plays a part in their daily lives as will be seen below. Paul is under the care of his doctor for his weight concerns and Bronagh describes how she has self-corrected her past over-eating behaviors with the help of her mother. Other students are more casual in interviews about their diet and exercise habits, and many even joke that their diet or exercise habits are very poor and that they mostly eat junk food. Paul and Bronagh, however, describe nutritional concerns as a central, persistent worry in their lives. The pressure that Paul and Bronagh feel highlights the significance of visual outcomes in determining who is healthy and who is not, and, in the case of Bronagh, the unhealthy behaviors that some children develop in response.

Paul is a second year student at Meánscoil Béal Feirste who is very quiet and shy and is from the area of West Belfast immediately surrounding Meánscoil Béal Feirste. Paul says that he receives advice about diet and nutrition from his general practitioner (GP) and his PE teachers at the college. His doctor teaches him about healthy diet and eating and tells him that he is not allowed to eat high fat foods and should eat more fruits and vegetables instead. Paul says that his PE teachers tell him the same thing. I ask if he always follows the advice from his doctor and PE teacher and he says not always because “it can get annoying...I do most of the time though” (Paul, interview). Later in the interview, I ask Paul to tell me the most important thing to him in his life right now. I say that it does not have to be related to diet or exercise, it can just be anything that he thinks

is important. The most common answer from other young people is “family and friends” but Paul’s answer is that his weight is the most important thing to him. Paul explains that his weight is so important “cause I’m sort of over the line and I need to cut down on stuff”. He says that his doctor has told him that he is overweight and needs to cut back. Paul’s discomfort with talking about his weight becomes apparent as the interview goes on so we move on to other topics, but it is obvious that his weight is a source of concern in his life.

Bronagh is a very quiet girl in her second year at Meánscoil Béal Feirste. When I ask where she learns about healthy diet and exercise she says that her mother “would look over me and see what I’m eating so I wouldn’t be eating as much after meals or before meals”. She also says that she and mother have decided to stop eating at night:

Well we’ve been lookin on the internet you know...and you’re more likely when you’re eating at night time to turn to fat. So we’re just stopping (Bronagh, interview, April 2011)

Bronagh also cites her PE teachers as a source of knowledge about proper foods to eat and how much exercise she should get. Bronagh says that this knowledge is important to her because a few years ago she realized when she ate with her friends that she was eating more food than anyone else. She went to her mother to see how should could eat less. She explains:

I used to look at my friends and see that they’d have little and I used to have more and I realized like every time I took more I’d get even more so I talked to my mummy and my mummy said that’s the way I used to be and I can help you, so she helped me with it (Bronagh, interview April 2011)

Bronagh’s concerns have led her to change her diet and some of her friends have joined her and her mother in their efforts to regulate her diet.

However, the changes to Bronagh's diet go beyond eating a healthy or balanced diet. This might be because she has focused her efforts on eating less instead of eating healthier. She explains how she usually just drinks water for lunch now:

well yeah, well, I used to eat junk at lunchtime but now I would just take a bottle of water with me but sometimes you just look up and it's a friend eating sweets but you can't say anything to them because I used to eat sweets too, but I'm just drinkin' water now really...I wouldn't say anything if they were sayin' hey you're not eatin' anything I'd more likely just say I'm not hungry [...] I'd just say I'm not hungry and just take water (Bronagh, interview April 2011)

When I ask what her about the most important thing in her life right now, Bronagh says that she worries about “what I'm eating and the kind of shape I'm in so I would be worried about the figure too” (Bronagh, interview, April, 2011). Bronagh and Paul reflect the ways that young people struggle with concerns about their weight, and they represent the burden placed on young people who worry about their weight. When Paul and Bronagh are compared to other children who joke about eating junk food and being obese, it is clear that adolescents negotiate a fine line in which junk food plays a central role and yet the importance of junk food should be diminished when weight gain occurs. Many young people cited obesity as a reason that nutrition should be a priority for people their age and several of these answers are qualified with the idea that nutrition should only become important if one is overweight.

The more I spoke with young people in Belfast, the more it became clear that they prioritize nutritional advice more when they felt they were putting on weight and showed less concern about nutrition advice when they felt they were the right size. In the questionnaire, students were asked to write-in why they think a healthy diet and exercise is important for people their age. Two factors were most frequently mentioned in response to this question: 1) not wanting to gain weight or be “fat” and 2) a desire to stay fit. Despite the range of habits and priorities surrounding diet and exercise, nutrition

became more or less important for most young people based on the body weight and physical fitness of the individual.

The perceived importance of nutritional advice based on body size provides a good example of the disconnect described by Johann Pottier (1999) between the nutritional knowledge obtained from school, home, and media sources and the daily practices of adolescent's lives. Adolescents are exposed to a variety of information that both promotes healthy eating and deters the accumulation of excess body fat and yet obesity rates remain persistent in the community. As indicated in chapter 3, diet and exercise practices do not directly correlate with nutritional status outcomes in that diets higher in fats and more limited physical activity do not coincide with higher rates of obesity within the sample population. Furthermore, sociocultural influences play little role in shaping nutritional status outcomes, even if they play a more significant role in shaping diet and exercise practices.

This has led me to search for other aspects of life in Belfast that might explain the seemingly anomalous existence of numerous programs aimed at improving the nutrition of teenagers and high rates of obesity. After listening to the ways that young people respond to obesity and seeing prominent messages about obesity in the media, I noticed that adolescents in Belfast appear to avoid the visible consequence of weight gain so that they are not categorized as risky bodies and can maintain their current nutritional habits. Media sources are the only nutritional information sources I encountered that continually give off negative images of obesity designed to shock viewers. Further research could perhaps solidify the connection I have made between negative attitudes towards obesity

and media outlets or could uncover other factors that influence attitudes towards body size in Belfast

The competing nutritional messages from school, home, and media sources show the complex environment in which young people make nutritional decisions in Belfast. Amidst this complex environment, attitudes of research participants reflect negative feelings about obesity mixed with more ambivalent responses to healthy eating. Adolescents in Belfast need to be taught to disassociate healthy eating messages with body weight or these messages will be muted. However, negative images about obesity and healthy eating programs are not the only competing nutrition messages to which adolescents are exposed. In the next chapter, a case study in West Belfast further complicates the environment in which adolescents make nutritional choices.

Chapter 7: Untangling the “Web of Causation”: Adolescent Nutrition and the Environment in West Belfast (A Case Study):

As noted in Chapter 4, the sample population in West Belfast has an average HAZ z-score that is significantly lower than the WHO healthy reference mean and an average BAZ z-score that is significantly higher than the WHO healthy reference mean. Therefore, it is likely that micronutrient deficiencies are accompanying the over-consumption of high calorie diets for adolescents in West Belfast (Crooks, 1998). The presence of both over- and under-nutrition in West Belfast is, in all probability, an outcome of the long-standing poverty experienced by the community, as the coexistence of micronutrient deficiencies and obesity have been found in other low-income contexts in both developing and developed countries (Armstrong, 2003; Subramanian, 2009; Popkin, 2009).

In this chapter, as part of my continuing effort to understand nutritional outcomes in Belfast using a biocultural perspective, I examine the political-economic factors shaping adolescent nutrition in the broader community of West Belfast. As discussed in chapter four, students in the sample population do not have significantly different diet and exercise habits than students from other areas of Belfast, but they do have significantly higher levels of poverty when compared to students in the sample population who do not live in West Belfast. Understanding the political-economic environment in West Belfast explains the broader factors that shape the lives of adolescents and the resources that shape the nutritional practices discussed in chapters 4, 5, and 6.

This chapter further unravels the web of factors that shape nutritional status in the sample population by examining the political economic environment in which advice,

autonomy, and sociocultural influences on nutrition are shaped at the community level. A focus on the political economic aspects of West Belfast moves this nutritional study beyond the input and output variables associated with nutrition (*i.e.* diet, exercise, and nutritional status) to give a broader picture of the factors shaping priorities and perspectives towards nutrition in the community. I found that, in West Belfast, nutritional concerns are subsumed within a much larger list of concerns regarding the health, safety, and well-being of adolescents, and immediate and pressing concerns are often shaped by perceptions of youth culture and the history driving youth resource provision in the community.

In this chapter, I demonstrate that negative perceptions of youth culture spurred by a history of violence in West Belfast have left the community in a position where nutritional messages are lost amidst more pressing concerns related to violence, drinking, and drug use. However, I argue that these perceptions of youth culture only reflect a subgroup of teens living in West Belfast today and that changes in the political dynamics of the community have led to changes in youth culture that have yet to be reconciled. The political economic lens of this chapter frames the obstacles facing the implementation of nutritional programs in West Belfast today, which contextualizes the attitudes that young people have towards nutrition. I examine food and exercise resources available to teenagers in West Belfast and the ways that youth culture and youth resource provision shape perspectives related to nutrition in this area of the city.

As noted in Chapter 4, area of town and SES have significant effects on HAZ scores where low-income students and students from West Belfast have the lowest HAZ scores. BAZ scores remain high regardless of area of town or income level indicating

that obesity manifests itself in all areas of the city. In this chapter, I consider the history of poverty in West Belfast and how this history has shaped contemporary resource provision and youth culture in this region of the city. In doing so, I depict the conditions of daily life in West Belfast that relate, not just what young people eat and how often they exercise, but how they negotiate the spaces in which they live and the factors determining resources at their disposal. In doing so, I demonstrate factors beyond diet and exercise that shed light on the juxtaposition of micronutrient deficiencies, over-nutrition (high rates of obesity), and a high concentration of low-income adolescents in West Belfast. This broad, political-economic perspective accounts for the numerous facets that shape nutritional status outcomes, such as proximity to food outlets and access to community resources, beyond direct diet and exercise resources. While it would have been interesting to explore all of Belfast with such ethnographic intensity, each area of the city has a very different history and the lives of adolescents can differ greatly from one area to the next. This case study is meant to supplement the more general information about diet and nutrition that precedes this chapter. A greater ethnographic understanding of adolescent nutrition in other areas of the city would be a very interesting topic of study for future research.

Urban environments are complex mosaics containing diverse sociocultural and physical components. This makes it all the more difficult to understand the choices that young people make about their diet and exercise. Various sociocultural and physical phenomena can be identified in a city, but these descriptions only provide a composite sketch. For example, in the area of West Belfast that houses Meánscoil Béal Feirste, the population is largely Catholic and Nationalist. Poverty, job loss, and a lack of

government funding have plagued the western portion of Belfast since the city's inception. West Belfast is also an area of the city that has known conflict and military occupation. These factors are often used to paint a picture of life in West Belfast today, but they are only the superficial observations one could make from reading any newspaper. Such a general description would overlook the vast network of grass roots activism that has brought improved resources to West Belfast and settled disputes with police and neighbors. In recent years, residents have fought to achieve equal attention from their government and peaceable interactions with the police. Therefore, despite the ease of generalizations in different areas of Belfast, it is important to move beyond general descriptions and towards an ethnographic appreciation of life in West Belfast today.

West Belfast:

Today, the term "West Belfast" is both a political and a social distinction because it describes the parliamentary district in the West of the city as well as evokes a social picture of working class neighborhoods and of sectarianism. When I use the term "West Belfast", I am referring to all areas of Catholic West Belfast to the South and East of the Shankill (the predominantly Protestant area of West Belfast- see map Figure 1 on page 161).

In Belfast, very small distances signal vast gaps between groups living very different lives. West Belfast's geographic layout includes significant boundaries between groups living intersecting yet divergent lives. My own interaction with space as a fieldworker became unconsciously framed by these boundaries. I arrived in Belfast in September of 2010 and it was not until May of 2011 that I had the opportunity to venture

into the, traditionally Protestant, Shankill area of West Belfast on a city tour with friends. My focus on an Irish language school in a predominantly Nationalist community made this space seem far away and difficult to access; yet, it was only a few streets away from my daily activities. A school worker captured the spatial divisions of West Belfast when she told me that she had never been to the Shankill, despite growing up a quarter of a mile away, until she took a visiting friend on a bus tour of the city. These social boundaries are further exacerbated by physical boundaries such as the tall, metal peace wall, which divides the border between Catholic West Belfast and Shankill.

These boundaries date back to the sectarian riots of 1969, which displaced Catholic and Protestant populations living in North and West Belfast. Forced relocations occurred in streets where Catholics and Protestants lived together and at the fringes of traditional ethnic enclaves. One of the most infamous cases is the burning of Bombay Street where Catholic residents were violently forced out of their homes by Loyalist mobs (Russell, 2005).

Walking through the city today, the boundaries coincide with the lack of multi-ethnic neighborhoods in West Belfast. However, one resident explained to anthropologist Allen Feldman that these divisions are a recent phenomenon, though one that might continue far into the future. As quoted by Feldman, she explains the atmosphere in Belfast after the Troubles of the 1920s:

In the twenties, funny enough, that bitterness all left which it won't do now. Both sides wanted to mix together then. In my opinion there's too much hatred now...In the twenties, the ordinary working-class people did mix and that continued to 1969. Then when the Troubles started again, me and two women next to me were the only Catholics in this estate. It was all Protestant neighbors around you...We were all great friends. Now it is all different (24)

This description, and others like it, serves to denaturalize, yet also solidify existing boundaries as the most recent troubles are credited for leaving a divided legacy in West Belfast.

Catholic West Belfast, like the rest of the city, is divided into several areas, each with distinctions in class and character. The central artery of Catholic West Belfast is the Falls Road which becomes Andersonstown Road and then Stewartstown Road at its southern-most reaches in Derriaghy and Dunmurry. As the road winds through West Belfast it passes several distinct areas including the Upper Springfield, Beechmount, Andersonstown, and Lenadoon. These areas have unique characteristics that differentiate them from one another. For example, students at Meánscoil Béal Feirste regard Andersonstown as a more “posh” area of West Belfast that is considered more middle class. Meanwhile, the Upper Springfield and Beechmount struggle with some of the most severe deprivation in Northern Ireland. It is easy to see slight differences in income throughout West Belfast and yet they exist within close proximity to one another. The northern reaches of West Belfast have the highest levels of deprivation while poverty levels decline as you get further from city center (NINIS, 2010). The patterns of poverty and segregation described are unique to West Belfast. Other areas of the city remain much more contentiously segregated than West Belfast (such as parts of North and East Belfast) and pockets of poverty are less pervasive in South and East Belfast. Therefore, the geography of West Belfast is unique and does not necessarily represent the city as a whole.

West Belfast, despite its heterogeneity and troubled history, is replete with cultural and language revivals, festivals and art that unify Catholic/Nationalist residents.

One theme that unites West Belfast is the history and burgeoning Irish language culture, and Meánscoil Béal Feirste, visible from the Falls Road, is a central pillar of this cultural and language revival. All along the Falls are famous landmarks and murals that commemorate the history of the city, and particularly its Nationalist struggle. As you leave city center on the Falls Road and cross over the motorway into West Belfast, you are greeted by Divis Tower, on the left, with several murals celebrating Irish sports and politics. Political tours led by former political prisoners meet daily at Divis and continue to the various sites along the Falls including the Sinn Fein political office, the Falls Leisure Center, the Bobby Sand mural, Republican memorial gardens, and Milltown Cemetery. Taking these tours always gave me a sense of how much the community has changed over the last twenty years as the tour guides describe long-gone government check points and buildings formerly occupied by the British Army.

The heart of the Falls Road located in the Beechmount area, has been classified as a Gaeltacht quarter, meaning it is a center of Irish language revival. The shops in the Gaeltacht Quarter have signs in English and Irish, and even the buses flash their destinations in both languages. This is embodied by Culturann, a restaurant and Irish language center housed in a large brick building that was originally a Presbyterian Church and later an Orange Order lodge (a Protestant political organization). Meánscoil Béal Feirste was originally housed in Culturann as a small community school taught by volunteer teachers. It has since gained official recognition and funding from the Belfast Education and Library Board and has been relocated to a large school building up a winding hill off the Falls Road. When school lets out, the shops and chippies at the

bottom of the hill quickly fill with students in the green Meánscoil Béal Feirste uniforms as do the buses and taxis heading up and down the Falls.

The shop fronts on the Falls Road are all in good order and there is very little degradation in the physical environment. The many murals on the walls of houses and shops are well-kept as they are continually re-touched by community artists and new murals crop up from time to time on empty walls throughout the city. Some of these murals are painted by teenagers working with youth organizations to help draw attention to youth issues like suicide, drinking, and drug use. The upkeep of the Gaeltacht Quarter on the Falls Road and cultural themes of the murals signify a move by community leaders to bring tourism into West Belfast.

However, once you leave the Falls Road, the houses and the environment begin to show signs of deprivation. Houses along the Springfield Road face a peace wall topped with a fence to prevent people from Catholic West Belfast and the Shankill from throwing things at each other. The gate of the peace wall closes at night and the only access to the Springfield is off the Falls Road. Even the murals away from the Falls have a darker subject matter and deal with deaths caused by the British Army and the struggles of occupation. On one side road, there is a memorial wall with photographs of all of the victims killed by the British Army during their occupation. Even the murals with the darkest subject matter tend to avoid violent themes and focus more on the civil rights struggles of West Belfast. Meanwhile, murals in the Shankill still maintain some violent themes, including a gunman whose gun points at you no matter where you stand. These murals are integrated into not only the culture of these areas of the city, but also the image that they want to portray to other city residents or to tourists.

Further up the road, the Falls becomes the Andersontown Road in Andersontown and the deprivation levels begin to decrease. There is the Andytown leisure center and a large GAA (Gaelic Athletic Association) stadium called Casement Park where hurling and Gaelic football matches are played on weekends. Next, Andersontown becomes Stewartstown Road and crosses over an interface encompassing the traditionally Catholic Lenadoon and the traditionally Protestant Suffolk areas. A cross-community service organization just off the Stewartstown Road has been successful in linking resources in these two communities and is hailed as a success in cross-community relations. The organization even held a cross-community party to celebrate the Royal wedding in May of 2011. Finally, if you continue up the Stewartstown Road you reach Poleglass and Twinbrook, the southernmost regions of West Belfast that are still largely Catholic or Nationalist.

The Falls, Andersontown, and Stewartstown Roads are always busy with traffic, including cars, buses, and Black Taxis. During the Troubles, bus services were often interrupted so the Black Taxi Association was organized to transport West Belfast residents to and from city center. Today, these taxis continue as a cooperative business and run more routes than the buses, which tend to stick to the major roads. Buses and Black Taxis make the city center easily accessible to young people living throughout West Belfast, who travel “into town” on weekends and after school to go shopping, eat, or even occasionally to work. The mobility of teenagers allows them to move around after school without requiring rides from their parents. They can go to a variety of restaurants or participate in sports and youth clubs that are within walking distance from their houses. There are also three shopping centers in West Belfast with fast food

restaurants, clothing stores, and movie theaters. This leaves students with multiple spaces for shopping and hanging out both inside and outside the city center.

Poverty in West Belfast:

As one can tell from even the most general description, West Belfast is a diverse region of the city; yet despite varying poverty rates throughout the West, income levels remain generally lower than other areas of town, particularly the wealthy South and East Belfast neighborhoods. Northern Ireland has traditionally had much higher rates of poverty than other regions of the UK (Sefton, 2009), and West Belfast is one of the poorest communities in all of Western Europe (Horgan, 2009). Current levels of deprivation in West Belfast are the legacy of the industrial working class that has lived in the area since Belfast first became a city. The industrial origins of West Belfast centered on the linen industry fueled by the Farsset River. This industrial boom in the West attracted people from all over Ireland who crowded the west of the city where women worked in the linen mills and men worked unskilled jobs in the docks in the north of the city when they could be found.

Crowding and low-wages had implications for health in the city, as described by Jones (1975):

The most eloquent commentary on such conditions is the fact that in Belfast in 1851 the average expectancy of life from birth was 9 years; and half the population was under 20 years of age (213)

Low-incomes and crowding continued to define West Belfast during the industrial age.

As the linen industry declined in the 19th century and the shipping industry became more exclusive to the Protestant workforce, unskilled laborers of West Belfast found it difficult to find work.

Unemployment and poverty continue to plague West Belfast in the 20th and 21st centuries. Leo Howe (1990) has argued that the high rates of unemployment in some communities ignite social stigmas in which people in low-income communities are portrayed as unwilling to work or have become dependent on government support. Income discrepancies have real consequences for health in West Belfast. The age at life expectancy in West Belfast is 6.1 years lower for men and 4.6 years lower for women than the national life expectancy in Northern Ireland (Connolly, 2011). Furthermore, cancer, respiratory disease, and circulatory disease are all higher in West Belfast than the rest of Northern Ireland (NNIS, 2010). Since heart disease is the main health concern in West Belfast, health programs often target young people in hopes of staving off chronic illnesses early in life by instilling healthy behaviors at a young age. Many of these programs focus on drinking, drug use, and nutrition spurred by fears that these behaviors will culminate in chronic problems later in life.

As noted in the previous section, despite high levels of poverty, low-incomes are not evenly distributed in West Belfast, and poverty decreases as one moves further south. To gain a better understanding of diversity within West Belfast, I divided the sample population into various areas using students' postcodes. There are five postcodes in West Belfast: BT10, BT11, BT12, BT13, and BT17 (for a map see Figure 2 on page 161). After entering student postcodes into the Northern Irish deprivation database (ninis.co.uk) I found that deprivation is highest in the sample population for students from the BT13 postcode. BT10 has no students from the top 10% deprivation level, but there are only six students from this postcode in the questionnaire sample. 82% of the children from BT12 come from a community that is in the top 10% deprivation in Northern Ireland

along with 61% from BT 17 and 49% in BT11 (see Table 7-1). Therefore, students from the northern reaches of West Belfast are more likely to be deprived than students from other areas of West Belfast. While there is a range of deprivation in West Belfast, there are no significant differences in nutritional status outcomes between postcodes, indicating that divergent levels of deprivation are not having an effect on long-term or short-term nutrition in West Belfast (see Table 7-2)

Table 7-1 Students living in the top 10% of poverty by postcode

Postcode	Students from Top 10% most deprived areas
BT10 (n =0)	0
BT11 (n =30)	61%
BT12 (n =67)	100%
BT13 (n = 8)	89%
BT17 (n = 28)	61%

Table 7-2 HAZ and BAZ outcomes by West Belfast postcode

	Postcode	N	Mean	Std. Deviation
HAZ*	BT 10	3	-.616667	1.3124913
	BT 11	35	-.159429	.9384027
	BT 12	59	-.370847	1.0693622
	BT 13	11	.112727	1.3396723
	BT 17	40	-.073750	.9162065
BAZ**	BT 10	3	.7967	1.13580
	BT 11	36	.5475	1.12857
	BT 12	59	.8375	1.10330
	BT 13	12	.3975	1.11663
	BT 17	40	1.0287	1.13025

* BAZ F (4) = 1.274, p = .283

** HAZ F (4) = .951, p = .437

Diet and Exercise Resources in West Belfast:

Exposure to fast foods (Jeffrey, 2006; Davis, 2009), access to grocery stores and shops (Cawley, 2006), and access to spaces for physical activity (Gordon-Larsen, 2006; Hills, 2007) have all been connected to nutritional practices and outcomes. Therefore, the geographic walking survey and food acquisition data from the questionnaire provide a measure of these variables on nutrition in West Belfast. Other food locations such as

home and school have been discussed in chapter five and are not covered again in this chapter since data analysis does not reveal any significant differences between interactions with home and school for students from different areas of town. While my critique of obesogenic environments precludes an exclusive reliance on resource availability and distribution across physical space, the connections between physical opportunities for eating and exercise cannot be overlooked. They are a critical part of the web of causation that I attempt to untangle to appreciate nutritional practices and outcomes for adolescents in West Belfast.

In West Belfast, there is no significant connection in the sample population between take-away consumption and nutritional status outcomes (measured in BAZ) ($F(4) = 1.812, p = .131$) (Table 7-3). Yet community workers, teachers, parents, and students frequently blame the many fast food restaurants and take-aways and the difficulty of finding healthy foods in shops for the poor diets in the area. Take-aways, often called chippies in Belfast, are located on nearly every block of the city and West Belfast is no exception. They outnumber restaurants by a wide margin and are a favorite among young people.

Chippies do not offer any seating and tend to be quite small. They contain a counter, a menu, and a small kitchen, and their size might account for their ubiquity. Chippies offer chips, curries, chicken goujons (fried chicken), kebabs, hamburgers, and an array of soft drinks. Children, especially teenagers, are a frequent sight in chippies or you can see them walking along the road eating their food out of small Styrofoam packages. Some of the chippies near Meánscoil Béal Feirste even open up briefly at lunch time so that the oldest students, the only ones who are able to leave school, can get

lunch. They then close again until supper time. Along with locally owned chippies, there is also McDonald's, KFC, Burger King, and Subway in West Belfast.

Table 7-3 Take-away consumption and BMI-for-age z-scores

Number of meal meals from a take-away each week	N	Mean BAZ*	Std. Deviation
None	18	1.4194	1.13381
1 to 2	83	.7184	1.08069
3 to 4	14	.7007	1.03462
5 to 6	2	.9250	2.07182
Everyday	1	-.2600	.

* $F(4) = 1.812, p = .131$

To gain a better understanding of the volume of take-aways I have recorded the location of all of the take-aways I could find within a 6 mile radius of Meánscoil Béal Feirste. On this walk (see Figure 3 on page 161 for route), I recorded and mapped 57 take-aways and restaurants. This seems like a lot of fast food in a six mile radius, and I examined the effect of proximity to fast food on adolescent nutrition in West Belfast. While some studies have linked proximity of fast food to higher rates of obesity (Niemeier, 2006; Jeffrey, 2006) others have been unable to find any such connection (Papas, 2007).

For the purposes of this research, it can only be concluded that fast food restaurants are easily accessible to Meánscoil Béal Feirste students and that students are eating from take-aways, but overweight and obesity do not correlate with higher take-away/restaurant consumption. Questionnaire data show that most students (68%) from West Belfast report eating food from take-aways one to two times a week (Table 6-6). While there is not a significant relationship between BAZ and take-away consumption for students from West Belfast in a univariate ANOVA ($F(79, 2) = .237, p = .789$) (see Table 7-3 above), more frequent visits to restaurants and take-aways coincide with higher

consumption of fried foods and sweets ($\chi^2 (3) = 8.929, p = .03$) (Table 7-4). This indicates that fast food in Belfast is unlikely to be a driving cause of higher weight among teenagers, and yet eating at restaurants and take-aways has a negative effect on diets as more fried foods and sweets are consumed by these students³.

Table 7-4 Take-away consumption in West Belfast

Eat at Take-aways (West Belfast students only)*	N	Percentage
Never	24	14%
1 to 2 days/week	120	68%
3 to 4 days/week	27	15%
5 to 6 days/week	4	2%
Everyday	1	1%

*($\chi^2 (3) = 8.929, p = .03$)

Also, during the walking survey, I located 28 shops and grocery stores within six miles of Meánscoil Béal Feirste. Shops are not an overwhelming influence on diet in West Belfast. Students buy unhealthy foods like sweets or non-water beverages more frequently for themselves at shops than they do healthy foods as indicated by a Friedman's ANOVA ($\chi^2 (5) = 345.96, p = .000$). However, this does not have a major effect on their diets or nutritional status. Decreased fruit consumption is a significant connection between shops and diets, since students who buy fried foods and sweets at a shop eat fewer portions of fruit each day ($U = 2505.5, p = .008$) but there is not significant influence of shops on any measure of nutritional status. Shops provide an easily accessible venue through which students have direct control over their diets and nutritional status outcomes. However, this freedom does not seem to have an adverse effect on adolescent nutritional status, at least as it relates to BAZ.

³ It would be interesting in the future to conduct a similar walking exercise in another area of Belfast to compare whether the density of chipees varies in different areas of Belfast and whether this has any effect on nutrition.

The walking survey also revealed that there are ten parks, youth clubs, and leisure centers within six miles of Meánscoil Béal Feirste providing ample space for physical activities. The school also has a football pitch that students can use during the school day. 34% (n = 53) of the students from West Belfast exercise five or more hours per week, and 40% (n= 62) of the students from West Belfast go to youth club one night or more each week where they can participate in football games or dance classes, though there are non-physical activities at youth club as well. The top physical activities in West Belfast are walking, running, football, Gaelic football, and swimming. Table 7-5 shows the percentage of students that participate in these sports the week of the questionnaire.

Table 7-5 Sports in West Belfast

Sport	% of Students participating in past week
Walking (n = 123)	70
Running (n = 101)	57
Football (n = 74)	42
Gaelic Football (n = 53)	30
Swimming (n = 52)	30
Dance (n = 45)	26
Hurling (n = 32)	18

There is a thriving sports culture in West Belfast, and young people who are interested have access to football pitches, parks, and, to a lesser degree, leisure centers. Boys and girls at Meánscoil Béal Feirste and youth clubs often wear t-shirts and jackets supporting their favorite football or hurling teams. Sports rivalries run deep and wearing clothes that support the “wrong” team, can lead to unwanted attention in certain areas. Casement Park, a large GAA stadium is full on weekends with fans of the Antrim hurling and Gaelic football teams, and young GAA teams come out on the field and play short games during halftime. Football is hugely popular in the city especially with boys, and PE teachers say that some boys see a career in football as a chance for success and

wealth. Girls can play competitive camogie and football through the school or GAA, but dancing is one of the most popular sports (37% of the girls in the sample population danced in the week of the questionnaire). They travel to competitions throughout the island with their youth club dance squads. However walking (80% of girls in the sample population) and running (53%) are more popular among girls than dancing, indicating that many girls are exercising independently rather than on team sports.

While access to spaces for activities is often blamed for obesity in the obesogenic literature (Gordon-Larsen *et al*, 2006), one school administrator in West Belfast explains that opportunities for exercise in the community are not scarce:

The place is coming down with football pitches. There's all weather pitches now there's GAA clubs with the pitches, they're all providing sport and activities. You have a number of clubs here on Saturday morning. You have hurling, Camogie, football, soccer, it's unbelievable and these are people who are not getting paid for this at all on a monetary basis and they're putting in they're devoting a big part of their lives to these children, and not all of them are taking them up on it

However, PE teachers explain that some students are just not interested in sports and this leads to a discrepancy in exercise between students who participate in sports and those who do not. Students from the sample from West Belfast who play Gaelic ($\chi^2 (1) = 15.005, p = .000$) and hurling ($\chi^2 (1) = 15.759, p = .000$) get significantly more exercise each week in nonparametric tests than students who do not engage in these activities (Table 7-6); however, independent sample t-tests do not reveal any significant effect on BAZ for students who play these sports more often. Therefore, students who engage in some sports get more physical activity each week than students who do not play these sports.

Table 7-6 Activities levels for Students who play Gaelic and Hurling

	Played Gaelic*		Played Hurling**	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Median Hours Exercise each Week	5 or more hours	3 to 4 hours	5 or more hours	3 to 4 hours

*($\chi^2(1) = 15.005, p = .000$); **($\chi^2(1) = 15.759, p = .000$)

It is clear that students who take interest in sports and activities get more physical activity each week than those who do not participate in sports. Yet, there are also several programs through leisure centers and youth clubs that encourage young people to become involved in sports and exercise for students who do not take an active interest in activities. Patrick, a Falls leisure center employee, is in charge of coordinating youth programs and a Teen Fit Club. He says that children under sixteen can enroll in special courses in which they play games and, as they get older, learn how to use the workout equipment. The young people are referred to the leisure center by their schools or through community health organizations that gather a group of young people and ask the leisure center to put together a class for them.

Patrick discusses different strategies he uses for different age groups:

For the young group...I try not to have them think too much that it's about getting fit, I try just to get them to have fun that's the important thing. If they're having fun they're not thinking about the fact that they're exercising. So basically just getting them moving...the older kids they go like adults and go and use the gym, but being so young they can only use the CV machines you know the cardiovascular machines for training, cross trainer, the bike that's the sort of machines (Patrick, interview, May 2011)

Patrick emphasizes fun and learning while getting children to enjoy physical activity. He says that he does not talk about diet specifically in his class apart from telling the children that when it comes to maintaining a healthy lifestyle, “exercise is 20% the other 80% is coming from diet” so he does emphasize that exercise is only one component of a healthy lifestyle. Patrick takes training classes through the city council about youth health and well-being that help him develop the content and activities for his classes. Programs, like

Patrick's, show the increasing number of opportunities for activities in West Belfast and the emphasis placed by community workers on fitness.

The physical environment in West Belfast houses multiple fast food outlets, shops, and spaces for physical activity. While it would be easy to blame fast food for causing obesity in the community, there is no connection between fast food consumption and nutritional status in the sample population. However, fast food is shaping the diets of young people since they eat more fried foods and sweets when they eat from takeaways. Students are also using shops to get sweets and non-water beverages for themselves. Therefore, students move around their physical environments and make choices that affect their nutritional practices. However, there is more to West Belfast than the physical lay-out alone. The sociocultural environment for teenagers living in West Belfast, along with youth resource provision, shape the ways that adolescents negotiate resources and resource provision in their environments.

Youth Culture and Youth Resources in West Belfast:

The difficulties and successes associated with distributing community resources to young people and the repercussions that arise out of, mostly negative, perceptions of youth culture in this area of the city were central themes that emerged over the course of my ethnographic research in West Belfast. Young people are often associated with so-called "anti-social" behaviors such as crime, drug-use, drinking, or rioting. Conversations about anti-social behaviors among young people in West Belfast sometimes felt like a distraction from the goals of this project. However, learning about the prevalence of anti-social behaviors and community responses to these behaviors highlights the factors shaping youth resource provision in West Belfast. Most

significantly, it has helped me understand that young people, regardless of their behaviors or motivations, are treated as a population that is in danger of making choices that damage themselves or their community. While diet and exercise definitely fall into this category, they do not inspire the same immediacy as drinking, drug-use, suicide, or crime in West Belfast. These issues also put into perspective the stakes that young people face in negotiating their diet and exercise. If you are in an environment where adults are warning you of the dangers of drinking, drug-use, and suicide, the foods you choose to eat and the exercises in which you engage might seem very benign in comparison. Furthermore, funding constraints and competition for funds make it difficult to provide for the broad spectrum of youth related needs in West Belfast, resulting in a more narrow scope of youth resource provision in the communities and an over-emphasis on the anti-social aspects of youth culture.

Therefore, the political-economic conditions in West Belfast shape perceptions of youth culture since a history of violence in the community have come to place limits on youth resource distribution in this region of the city. The broader factors shaping adolescent life in West Belfast frame the choices that young people make by delineating the choices (and lack of choices) available to young people in this area of the city. An examination of youth culture and the sociocultural environment in West Belfast illuminates the ways that young people interact with resources at their disposal and negotiate opportunities and constraints in their environment, a central tenet of adaptability theory. Studying youth culture in West Belfast as well as the sociocultural environment in which youth resources have developed highlights important aspects of adolescents' worlds along with the resource base from which they make choices.

In Northern Ireland, youth have historically played a central role in the political conflict both by joining paramilitary groups and rejecting paramilitary power through counter-movements such as joy-riding (stealing cars and crashing them) (O'Connell, 2006). As such, the effects of the Troubles on young people have been well-studied (Trew, 2001). Yet, young people today have lived their entire lives under the cease-fire and scaled back role of paramilitaries in their communities. While the legacy of the Troubles continues to shape some aspects of life in West Belfast, not all young people engage with this legacy. For some young people today, the Troubles are a thing that happened in the past, while others are more engaged and still harbor resentment towards Protestant communities.

Thomas, an outreach youth worker tells me that today paramilitaries are not seen as such a threat to young people.

It used to be paramilitaries would be a big interest, but because of the peace process and stuff the paramilitaries seem to be other people so they're not influenced at all (Thomas, interview, May 2011)

This shift in focus away from paramilitary activity speaks to the changes in West Belfast over the past twenty years and the removal of paramilitary groups as the central force in the community. It also speaks to a changing youth culture that has accompanied changes in the community. However, concerns about youth and violence are still central in many communities in Northern Ireland. Young people participate in yearly riots that accompany the 12th of July. Parents and community workers are often at the forefront of combating youth violence as the presence of police can make the situation even worse. Therefore, violence remains a concerns related to young people, but it has changed forms and diminished since the peak of the Troubles.

Youth services today include youth clubs, detached youth programs, educational initiatives, and job programs. Not all of these programs are based in facilities. For example, outreach programs hire youth workers to walk the streets at night to meet young people and ask them about programs and services that might interest them. Detached youth organizations develop programs and trips designed to encourage young people to take part in community activities and move away from anti-social behaviors like drinking and drug use.

I was able to spend some time in the office of one detached youth program called the Teen Involvement Project. The Teen Involvement Project, like many other youth programs in West Belfast, first started as a community response to violence and crime. Thomas, the director of this program, explains to me that first developed in response to a feud that was tearing the community apart:

There was a community feud between two families that got out of control and it ended with a death. And the intervention project was set up because there was young people that was very attracted to what was going on and there were on-going street fights most nights of the week. A lot of youth groups got together and they decided to take as many of the young people off the street as possible during the weekend nights when most of the trouble happened, and [our program] grew from that. So we would be very much a personal development, social education, community safety, citizenship program where we're trying to look at making young people look at their lives and make healthy choices. We never tell young people, we would never say you should do this or you shouldn't do that. We give them we inform them of their choices of what happened of the consequences of their choices and then it's up to them what they do with that (Thomas, interview, May 2011)

The Teen Involvement Project is no longer concerned with feuding or paramilitary activities; however, as Thomas points out, their organization hopes to give students the tools to make decisions that keep them healthy and happy. There is a shift in youth provision occurring in West Belfast as the peace process continues to evolve; however,

youth provision is still very much centered at the community level and still very focused on violent or anti-social youth activities such as rioting or violent crime.

However, youth violence and anti-social behaviors today are no longer directly tied to an on-going political conflict, making it necessary to evoke new types of youth work and intervention strategies- some of which involve efforts at cross-community reconciliation. One youth worker tells me that some young people in the community actively seek out programs that incorporate cross-community work with teens from the Protestant Shankill, while others are still very bitter and do not feel compelled to engage with Protestants at all. Paula, a detached youth worker explains:

If a cross-community project comes up I would offer it to the group but we wouldn't tell them they have to do it, so if they want to take it up they can. There's some groups that have got a lot of bad feelings so they wouldn't want to but there's lots of groups that are like yeah, dead on, we'd love to work with them, so you offer it to them you don't have to force it (Paula, interview, May 2011)

This ambivalence indicates that youth are currently divided and that youth needs are diverse and complex in West Belfast today.

Rosellen Roche (2008) argues that young people deal with the history of the Troubles and yet they possess a unique attitude towards political violence and reconciliation efforts. Roche's understanding of young people highlights the changes that have taken place for this generation of teenagers. She explains:

While two thirds of participants exhibited segregated life ways, two thirds of young people recognized such segregation and many felt that this should not be the norm. Discussing a 'better' Northern Ireland, most young people felt that more mixing should occur and should occur more regularly (198)

Roche argues that young people are creating "new communities of their own design" through social networking media by communicating with youth from outside their neighborhoods via Twitter and Facebook. She concludes that outreach services to

parents need improvement since parents of young people are still harboring resentment and anger over the Troubles and this is perpetuating negative feelings for some young people today. While her focus is exclusively on sectarianism, she has found that youth culture is changing and that the attitudes of young people differ from the notion held in previous generations that division and sectarianism are simply the way life works in Northern Ireland.

Dona Lanclos has extensively studied youth relationships to violence in Northern Ireland. She argues:

The fact that Belfast kids have folklore which includes violence...does not mean that they are inherently violent themselves, or that they will become...morally inadequate, militaristic automatons. Rather the folklore and the kids' use of it in context reveal an awareness of their reality...Adults (scholars and otherwise) are not looking at the Future when we look at kids. We are looking at those individuals who will (we hope) be living in the future, and this is a crucial difference...Kids' expressive culture is reflective of the world they inhabit, not necessarily predictive of what is to come. Perhaps the best that adults can do for kids is to give them a sense of possibilities, an awareness of options, even if we cannot give the specifics of what they must be prepared for" (156-157)

As communities slowly emerge out of conflict, it is possible that a latent fear of future conflicts is projected onto young people and this has repercussions for their lives. If peace is occurring today, will this generation be doomed to rekindle the violence that destroyed so many lives of the past generations? If we heed Lanclos' advice, this question is problematic because it focuses on the consequences of youth culture in a future that we cannot predict. This, and the findings by Roche, are important because so much of the focus on youth in Northern Ireland has been on violence and sectarianism; and, subsequently, so much of the youth resource provision has been shaped during conflict that it now requires some redevelopment to keep in pace with the recent past.

This shift away from violence prevention in West Belfast has been slow and onerous since the entire structure of youth resource provision has been shaped by the Troubles. Most facility based youth centers in West Belfast owe their existence to concerns about young people engaging with paramilitaries or violence. Norman Gillespie (1992) explains that community youth clubs were traditionally a government response to youth-based concerns in Northern Ireland, especially during years of peak violence. He argues that

Youth clubs have probably replaced the school as the major mediating institution between working class youth and the state. They are in a long tradition of attempts by the state, religious bodies, and other voluntary organizations to 'do something' about, and for working class youth (ix)

Gillespie frames youth clubs as a state-sponsored interference in working class areas and claims that the emphasis on community programs as a resolution to community problems is “a fairly cheap means of social control (however ‘well-meaning’ the organizers of such schemes)” (2). While this level of cynicism is, perhaps, extreme, Gillespie is critiquing the notion that communities can be saved by small social programs when larger political and economic institutions repeatedly fail to rectify structural problems that keep residents of West Belfast unemployed, underpaid, and engaged in an antagonistic relationship with each other and the government (Gillespie was writing during the time of British armed occupation in West Belfast). Today, community workers and parents are still at the forefront of keeping young people away from violent and anti-social activities since there is still a great deal of tension between police and teenagers. The energy spent at the community level on keeping young people safe and out of trouble could be detracting from other issues at the community level, thus

increasing the need for greater financial resources from the government aimed at young people.

While conditions have improved today and the British troops and barracks are no longer a feature of West Belfast, many community workers express frustration with the disconnect between community problems and the aims of funding organizations that provide less than ample funds for a very limited, and perhaps antiquated set of social problems. Michael, a community leader who has initiated a healthy eating program in Lenadoon, explains funding shortages in West Belfast:

One of the big issues with what's on offer is, it's very much short term funding...very very hard to plan. [...]. So everything is very short term. You're constantly having to battle with government departments and statutory bodies to get adequate funding despite the fact you've met all your targets- you've surpassed your targets and criteria and any outputs that have been set. The need has been demonstrated- the fact that we're meeting the need, but the big difficulty for us, it's very very difficult to plan long term (Doherty Interview November 2010).

With much of the burden of youth resource provision placed on the local communities through youth clubs and youth outreach organizations, one can sense the frustration that comes with such short-term funding.

Short-term funding means that community workers have little job security and it is difficult to follow up educational programs with additional information or outreach. Community workers make the most of the situation, but it is difficult to create lasting infrastructure that improves the health and well-being of young people. While there are spaces available for youth services and events as well as several adults willing to work with teens and send positive messages, funding shortages make it difficult to maintain outreach and community development. Youth work could provide consistent support and opportunities for young people and could, perhaps, become a dominant influence in the lives of teenagers if funding would become more consistent.

However, a resolution to this issue is unlikely to happen any time soon. These funding shortages start at the top of the government scale in Westminster and Stormont. Community development workers like Bill (a health worker at a prominent West Belfast NGO) blame funding shortages on “stove piping” where funds are divided up between departments with little overlap or collaboration. The central government at Stormont does not raise their own revenue; instead they are given a budget each year by the British Parliament at Westminster. Westminster assigns a budget for Northern Ireland at the beginning of each year and the Northern Irish government can then distribute this budget as it sees fit to the different departments in the government. Bill and other community workers I spoke with complain that this leads to a great deal of competition and little collaboration between government departments. By the time funding reaches the community, there are several local organizations vying for money, even though they sometimes have over-lapping goals.

Robert, the leader of community organization in West Belfast, explains that it can be difficult for community organizations to arrange for the person-power to successfully implement far-reaching programs. Therefore, several over-lapping organizations with smaller budgets do less than could be accomplished by a more unified approach. Robert explains that his organization is trying to overcome this obstacle and obtain more long-term, comprehensive funding:

[When our organization first started] we had a look around, having no new money, had a look around and we identified a resource and brought the resource to the identified need. So our role in all of that is not to bring money because there isn't any money but to identify the need, to identify the resource and act as a catalyst to bring the two of them together (Robert, interview, November 2010)

Creative community responses to funding constraints exist in West Belfast through organizations like Robert's and numerous other organizations that work together to improve social conditions in the community. However, there are still issues facing young people that need to be dealt with and funding, although improved and better implemented, is still not enough to incur lasting change. Furthermore, conversations about funding often lead to conversations about the larger needs of the community. If community funding is unavailable, long-term solutions for large-scale problems like unemployment are unlikely to be resolved in the near future.

Youth culture in Northern Ireland is changing rapidly, and perhaps these changes are denaturalizing divisions in the country. As noted in the previous section, the concerns of this generation extend beyond fears of paramilitary influence and violence and youth culture should include more than just the legacy of The Troubles. My interactions with young people centered, not around violence and conflict, but on pop music and favorite football teams. One youth worker explains:

They're all dying for Rhianna at the minute they've all got red hairdos. The boys it's definitely footballers the pop stars it's the singers [...].even their language some things they hear in the songs they would bring that out as well (Ruari, interview, October, 2010)

Youth culture is very connected to trends in pop music and sports. When teens heard that I am from America, they always wanted to know how many famous people I have met. Popular culture is clearly intertwined and is a highly visible aspect of youth culture in Belfast.

The wide array of interests of young people extends beyond the concerns directed at them by community organizations or the legacy of the Troubles. Due to the intimate connection between violence and youth service provision in Belfast, I would argue that

there is a need for a reassessment of youth resources in West Belfast that promotes holistic approaches to youth culture.

Despite the changing social and political environment in Northern Ireland, youth in West Belfast are still a very vulnerable population. They are vulnerable to ill health (physical and mental), vulnerable to violence, or to crime, drinking or drug use. Youth are also seen as a population that perpetuates violence and disorder in communities that wish to move on despite the complexity of emotions young people feel towards the conflict. These concerns have led to a number of youth related policy and resources in West Belfast.

While many community workers discuss concerns that young people are not eating healthy diets or getting enough exercise, in the over-all list of priorities for youth programs, especially those aimed at teenagers, nutrition receives a relatively low focus. Nutrition is a central focus in schools; however, as children become teenagers, concerns about their health and well-being become very focused on drinking, drug-use, mental health, and crime. Youth workers in the community prioritize the behaviors that are detrimental and dangerous to young people.

Desmond Bell (1990) criticizes responses to youth concerns in the 1980's arguing that: "youth provision has been largely motivated by social control imperative. Its claim to additional state funding has rested, to a large extent, on its perceived potential to combat 'the destructive influences of paramilitary organizations'" (1990: 204). Therefore, the structure of youth work in West Belfast has been predicated on a limited understanding of youth problems that are no longer relevant. Changes need to be made to keep youth work contemporaneous with youth culture. More importantly, changes to the

funding structure could increase the efficacy of youth work through lasting programs that reach further and encompass more than just the most dangerous or pressing issues.

Youth workers continue to develop programs with young people despite economic deprivation and funding limitations. When I ask youth workers in the community about their top concerns for this generation of young people, they list non-nutritional issues such as drug use, binge-drinking, violent crime, and suicide as topics of focus. West Belfast has one of the highest teen suicide rates in the world. In the year I spent in Belfast, no less than three young people from West Belfast committed suicide and two girls in interviews listed this as the most prominent concern or fear in their lives. Youth workers attribute high suicide rates to the prevalence of mental illness and anxiety in the community, which many believe to be the result of the Troubles. Social issues as dark and pressing as suicide place a project about nutrition in stark perspective, and diet and exercise are, understandably, not the top focus for youth funding or service in the community. The emphasis on more deadly issues highlights the web of messages and perspectives in which adolescent diet and nutrition choices are shaped. Funding shortages lead to trade-offs in resource provision and nutritional programs can easily fall to the wayside for teens.

Detached youth workers at The Teen Involvement Project say that one of the biggest concerns they face is teen drinking. As young people get older, drinking became more acceptable and one does not have to be around teenagers long before over-hearing conversations about students and teens being hung over. Some of the youth workers in their early twenties feel that drinking has become more pervasive in this generation of teens than it was in their own. This greater emphasis on drinking is blamed for lower

turnout by older teens in youth clubs who would rather drink than spend time at the facility. One youth worker in her early twenties tells me that when she was in secondary school they would drink on the weekends and go to youth club during the week, but now kids only want to drink all week long. Teen drinking habits are beyond the scope of this research project, though it is an issue of importance in the community, and much is being done to reduce teen drinking in West Belfast. Detached youth workers walk the streets each night and start discussions with young people to help them develop classes or programs that give them something to do other than drink.

In conclusion, the physical and sociocultural environments in West Belfast are multi-faceted and complex. Furthermore, youth move through these environments in complex ways. The physical structure of West Belfast offers young people the opportunities to move about freely in buses and taxis, to access fast food and shops, and to engage in physical activities. While high rates of poverty in West Belfast might limit the choices of young people economically, concerns for the well-being and behaviors of young people have led to an influx of youth related services in West Belfast. Youth workers pour infinite time and energy to improve the lives of young people and expose teenagers to new ideas and programs. These ideas and programs are likely taking hold as young people no longer see sectarianism and poverty as inevitable aspects of life in West Belfast. However, funding constraints limit the scope of community programs and tend to divert attention away from nutrition and long-term health. While these priorities make sense, as they are designed to keep young people safe and thriving, it is clear that nutritional messages are being subsumed by other concerns.

In May of 2011, I sat in the amphitheater of a secondary school watching an awards ceremony for local teenagers. Young people were being given awards for academic achievements, athletic accomplishments, or other positive contributions to the community in West Belfast. One theme was clear during this ceremony. The youth workers of Belfast are working hard to show that young people are making positive contributions to their communities and are achieving numerous accomplishments both in and out of school. Even the Lord Mayor of Belfast got up to speak on the topic. The mayor is a 26 year old member of the Sinn Fein party who was elected earlier in the year- the youngest mayor ever elected in Belfast. His speech encouraged adults to recognize the positive aspects of youth and to celebrate their accomplishments rather than record their participation in rioting on the 12th.

After all of the time I have spent discussing nutrition with people in West Belfast, it is clear that concerns about the nutrition of young people must compete with a wealth of other concerns facing teens in West Belfast including the way that young people are perceived. While heart disease is the number one killer in West Belfast, the more immediate concern is to keep young people alive, off of dangerous substances, and heading towards gainful employment. While these goals are useful for young people who suffer severe resource deficiencies or limited family support, it is clear that young people are seen as a population that is a danger to themselves.

The awards ceremony above is one of several efforts by youth workers to highlight the positive aspects of young people in the community. This speaks to the contrast between what youth are doing and how they are perceived. The work in West Belfast continues as community workers strive to find a balance between pressing needs

in the community and resources for young people who are not in immediate danger of making a life-altering decision. As West Belfast struggles to adjust to the changing perceptions and role of youth in their community, young people continue to negotiate their daily environments in complex and creative ways. The ethnographic perspective of West Belfast in this change has highlighted, for me, the need for holistic approaches to nutrition for young people. We cannot merely go in and reduce the number of chippies or encourage young people to snack less. Young people engage in numerous activities for a variety of reasons. In the end, more consistent messages about healthy eating might improve diets and exercise, but it is first important to understand where diet and exercise fit into the bigger picture of youth in West Belfast. This can help us recognize that small changes are unlikely to make significant impacts on the community and that larger, structural change such as better funding for community and family services would benefit all aspects of the lives of young people.

Chapter 7 Figures:

Figure 7-1 Catholic West Belfast (Green) and the Shankill (Red)

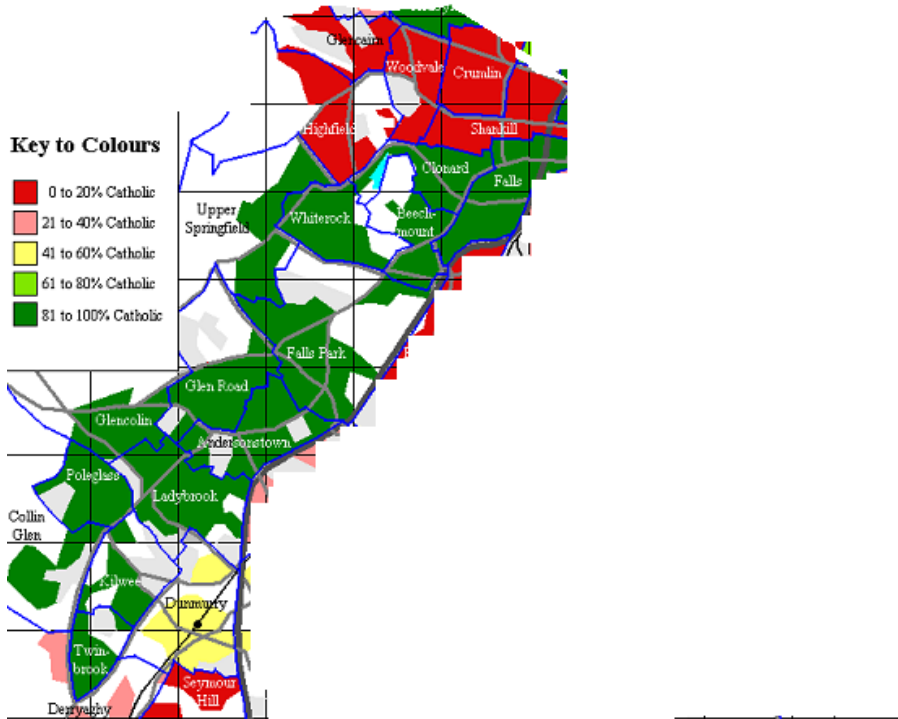
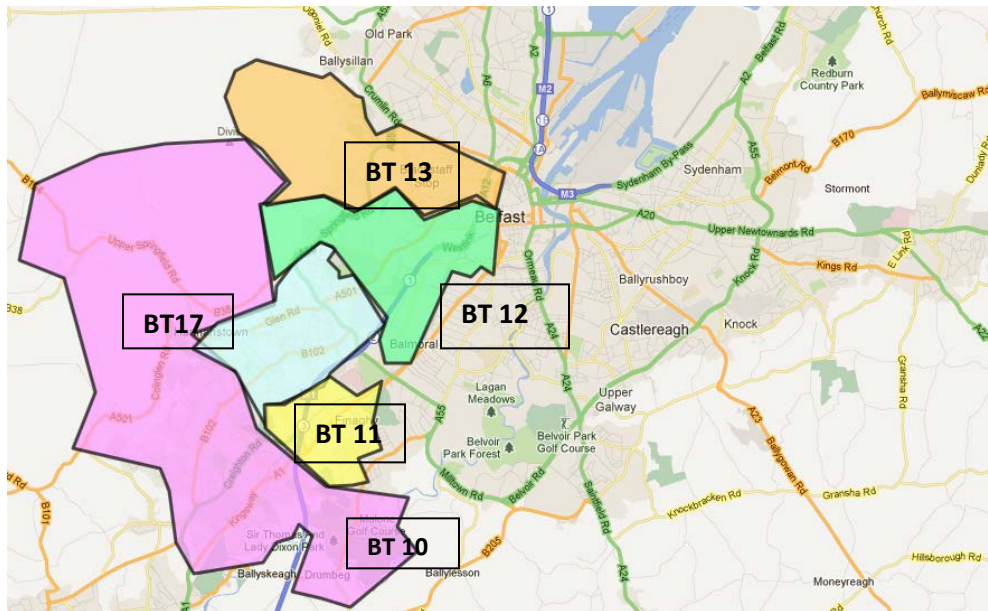


Figure 7-2 Postcodes in West Belfast



Chapter 8: Conclusions

In this dissertation, I have demonstrated that adolescent nutrition is a central priority in some areas of Belfast's culture while it is deemphasized and trumped by other issues in other aspects. I have applied a biocultural perspective to nutritional status outcomes in the urban environment of Belfast. This biocultural assessment consists of a diet, exercise, and anthropometric survey of a secondary school in West Belfast with students of different ages and genders that come from all areas of the city and diverse socioeconomic backgrounds. This survey revealed that students in Belfast are significantly heavier than the World Health Organization reference population with obesity rates varying by age and gender. There is also a likely presence of poorer nutritional environments that exist in low income communities where adolescents seem to be less able to access dietary and health resources (as indicated by height-for-age z-scores that fall significantly below the healthy reference mean). The high rates of obesity in the sample population are also an indication that the quality of diets might be low and filled with empty calories (this is reinforced by the frequent consumption of fried foods and sweets reported by adolescents in the sample population).

While nutritional deficiencies are present in Belfast, dietary data, gathered using a multi-component questionnaire, show few significant relationships with nutritional status outcomes in the city. Since relationships between diet, exercise, and body composition are tenuous, I turned to other factors that may shape nutritional status outcomes in Belfast. Sociocultural influences from parents, friends, teachers, and community workers are significantly associated with various diet and exercise practices, but again,

these diet and exercise practices do not correlate with nutritional status outcomes, even when accounting for mitigating sociocultural variables.

Food acquisition was another component examined in chapter five of this dissertation and again there were several relationships between food sources and dietary behaviors, but no significant relationships between food sources and nutritional status outcomes. Therefore, multiple aspects of the culture in Belfast have potential to shape nutritional practices, but few of these are directly correlated with shaping nutritional status outcomes since factors shaping nutritional behaviors in this sample had little influence on nutritional status. This led me to inquire how secondary school-aged students, who live in a city with high rates of adolescent obesity, interact with the nutritional advice that they get from school, home, and various media sources.

Interactions with nutritional knowledge, discussed in chapter six, reveal a deep seated aversion to obesity in the sample population, and the indication from many students that unhealthy diets and exercise practices become a problem only when their body sizes begin to rise. Therefore, rather than serving to prevent obesity, nutritional advice is likely employed at the outset of weight gain. This was connected, in chapter six, to a negative portrayal of obesity from media sources, which seems to have forged a picture in the minds of adolescents of the extreme consequences of weight gain rather than the benefits of eating healthy and exercising on a daily basis.

While weight gain might evoke a similar response in the sample population, I argue, in chapter seven that obesity is not a uniform outcome in the city of Belfast, and it is likely shaped by different factors depending on the area of town in which a student lives and the socioeconomic circumstances in their communities. Students from West

Belfast, much like the rest of the sample population are significantly heavier than the WHO reference population, and yet unlike students from other areas of the city, students from West Belfast are also significantly shorter than the WHO reference population. This is likely the outcome of dual malnutrition in which overconsumption of calories is accompanied by the possible under-consumption of micronutrients. Obesity rates in other areas of the city are not accompanied by the shortness in stature observed in the West Belfast population, and this is likely due to the high-rates of persistent poverty in West Belfast. In order to explore the connection between poverty and nutrition, I expanded the purview of this research beyond the diet and exercise choices made by adolescents. The political economic circumstances surrounding nutrition in West Belfast were also examined in order to fully understand the various factors that shape adolescent nutrition, both directly and indirectly.

In chapter seven, I found that adolescents in the sample population from West Belfast faced a variety of environmental constraints that will likely have long term consequences on their health and well-being. Negative assumptions about youth culture are an under-recognized by-product of the political conflict in Northern Ireland, and these assumptions have very real repercussions for youth resource provision today. Rather than recognize that youth culture is changing, and the needs of youth are changing with it, youth resource provision remains focused on the potential for young people to do harm to their communities (instead of focusing on the negative health and nutrition outcomes within the community). This is potentially damaging to young people since it does not account for the ways that growing up in low-income areas of the city might be damaging the long-term health and well-being of young people in Belfast. Concerns about an over-

emphasis on anti-social behaviors were expressed by community workers in West Belfast who desire a more comprehensive approach to youth-related concerns in the community but feel constrained by funding, resource, and personnel constraints.

The holistic approach to nutrition utilized in this dissertation has shown that nutritional outcomes do not necessarily adhere to expected trajectories. While obesity is often thought of as a means by which we can locate poverty (Brewis, 2010), the sample population in this dissertation questions the logic of this assumption. While there most certainly is obesity in low-income areas of the city, there is also obesity in wealthier areas of the city. Does this mean that we should deem Belfast as an “obesogenic city” in which adolescent body composition is shaped by a monolithic environment? I would argue that it is not that simple and that interactions with social and physical environments only give us a limited understanding of nutrition in Belfast. Instead, relationships to sources of nutritional information and political-economic circumstances reveal the complexities inherent in trying to unravel the web of features shaping nutritional status outcomes in the city. If we were to label Belfast as obesogenic, I argue that this could: 1) frame obesity as a monolithic category in the city even though it affects adolescents of different ages, genders, and areas of town differently; 2) ignore the very significant finding that micronutrient deficiencies are likely present in low-income areas of the city and that poverty might be limiting the capacity of young people to absorb or obtain adequate nutrients; and 3) would assume that students experience life in the city in uniform, predictable ways which much of this dissertation has shown is not true. Therefore, in order to achieve solutions to nutritional concerns, we must expand our understanding of the factors shaping nutritional outcomes.

Limitations of this research:

While the conclusions in this research point to some interesting connections between nutritional practices and outcomes there are some limitations to the research design that might affect outcomes. Foremost, the nutritional data used in this study are all self-reported and not based on direct observation. While this leaves such data vulnerable to inconsistencies or inaccuracies, self-reported nutrition and exercise data have been cited as a valid research tool since it would be nearly impossible to collect such data on a large scale using first-hand observation (Gibson, 2005; Kant, 2007). However, a follow-up study in which direct observations are used could be helpful in ensuring that diet and exercise data in this research do, in fact, reflect dietary and activity patterns of teenagers in Belfast.

Concerns about self-reporting speak to a larger potential limitation of this project. Diet and exercise can sometimes be sensitive topics for growing teens and there could be a tendency in the questionnaire or interviews, for students to misrepresent information about their nutritional habits or perspectives. This is a possibility in this research since heavier students reported healthier diet and exercise patterns in the questionnaire. However, all information can help us learn about a culture even if it is not a strict representation of diet and exercise habits (Saris, 1996). Even if overweight teens misrepresented diet and exercise data in the questionnaire or interviews, this indicates that these teens feel vulnerable in their habits, which reinforces the conclusion that diet and exercise habits are highly mediated by body size outcomes rather than the following healthy guidelines for the sake of good health alone. Despite the potential for

misrepresentation, there is still much to learn from the ways that young people describe diet and exercise behaviors.

Another potential limitation in this research is the fact that diet and exercise data were only collected one time from students in the sample population, when, ideally, they would have been collected several times throughout the year (Deschamps, 2007). This limitation is based on time constraints set by the school in which I was working. While the faculty and staff of Meánscoil Béal Feirste were more than accommodating to me and my project, it was just not possible for them to spare the classroom time for multiple surveys throughout the year. Perhaps the diet and exercise data would have been a bit more fleshed out had I had the opportunity to survey the students several times, but in a school working to meet the demands of rigorous testing, it was very generous for them to give me the time that they did and this limitation could not be helped. In the future, I would write a shorter survey that perhaps could be done several times a year to remedy this problem and intrude as little as possible on the school's busy schedule.

Where do we go from here?

Rather than approaching adolescent nutrition in Belfast as a problem that needs solving, I argue that it is better to look at the entire range of factors that shape nutritional practices and outcomes in the city. If one were to just look at the physical environment in West Belfast, for example, it would be easy to say that this area of town needs fewer fast food outlets; however, the failure to associate fast food with nutritional status shows we need to expand our horizons. When we look at all of the factors shaping the environment in West Belfast, deficient adolescent nutrition in the form of short stature and high rates of obesity could even demonstrate one of many casualties of funding constraints, stove

piping of government funds, and the deflection of problem solving onto communities rather than addressing these problems with legislation and political action (though more research is needed to empirically demonstrate this connection).

Desmond Bell (1990) and Norman Gillespie (1992) have both worked with youth in West Belfast during the Troubles. They argue that funding has been pushed into small-scale community programs that have little effect on larger community problems like unemployment or economic deprivation. These problems are directly associated with nutritional status in this dissertation where shorter stature, indicating long-term nutritional deficiencies, is located in areas of town with the most severe histories of unemployment and poverty. Now that the Troubles have settled and the power-sharing government has taken control of daily governance in Northern Ireland, funding problems continue to plague community efforts to improve resource provision.

Michael Doherty explains that a stronger emphasis on family services and better organization of community resource funding will go a long way in providing long-term solutions to the problems facing young people in the city. Gerry McMahon explains that a stronger network of community services with greater communication between service providers and fewer over-laps can reinvigorate the role of the community in addressing social and economic issues.

These would provide crucial first steps to addressing the most severe nutritional concerns in Belfast. The notion held by many academics promoting an obesogenic perspective, that providing low-income areas with more opportunities for physical activities or more grocery outlets seems out of touch with the situation in Belfast. As demonstrated in chapter four nutritional status outcomes associated with long-term

nutritional deficiencies (shorter stature for age) are directly linked to SES and the area of the city in which a student lives. Therefore, long-term effects to poverty are present in the city and require solutions that are not currently addressed by the political structure of Northern Ireland, while efforts to resolve issues at the community level are unwieldy and often stymied by an inefficient funding structure. Meanwhile, obesity is ubiquitous throughout the city with some significant differences between age and gender groups indicating that adolescents of different ages and genders have varying nutritional experiences. This is a topic that warrants further examination, particularly in parsing out the relationship between obesity and SES to determine whether similar rates of obesity in different areas of the city have disparate causes.

Sociocultural factors such as age, gender, influences, and sources of nutritional knowledge can all be connected to nutritional practices and, to a lesser extent, outcomes in the sample population. This reinforces the biocultural notion that people make complex choices about their nutritional practices, even amid constraints, and reinforces the utility of a political economic perspective that is more analytical than judgmental. The significance of sociocultural factors in shaping adolescent nutrition in Belfast also exemplifies the utility of a multi-faceted approach to nutritional research. Adolescents, their parents, their teachers, their friends, their community, and media sources all play a role in shaping the nutritional practices of adolescents in tangible ways. However, the link between sociocultural influences over diet and exercise and nutritional status outcomes is very shaky in this research.

This brings up a crucial point that I hope to drive home through this research. There is a pressing need for researchers to consistently examine the relationship between

diet, exercise, and nutritional status rather than taking for granted that healthy or unhealthy dietary behaviors are directly correlated to healthy or unhealthy nutritional status outcomes. Instead, this research has shown that the relationship between nutritional behaviors and nutritional outcomes is complex and multi-faceted. In some cases the relationship between nutritional behaviors and outcomes has been exactly the opposite of what we might expect to find if we assume that healthy behaviors translate to healthy outcomes. For example, students who exercise more frequently have higher BMI-for-age z-scores than students who exercise less frequently, while watching more hours of television each week is associated with lower BAZ scores. This could be the result of self-reported questionnaire data or it could indicate that a direct cause and effect relationship between input and output variables cannot explain nutritional status outcomes in the sample population. This highlights the benefit of viewing factors as a web of causation rather than a linear causal relationship. Diet and exercise were used to summarize nutritional behaviors in this research since they have been treated as such a central and crucial component in nutritional research. However, as I demonstrate in this dissertation, these behavioral factors can be coupled with environmental factors to produce a more sophisticated picture of nutritional status.

The academic nutrition literature and public health responses to adolescent nutrition are replete with concerns that unhealthy behaviors and environments are to blame for growing rates of chronic illness; therefore, they promote “fixes” that focus on individual behaviors rather than broader political and economic circumstances. Biocultural anthropologists have long pointed out that responses to public health concerns may be flawed and short-sighted (Panter-Brick and Fuentes, 2009), many

biocultural anthropologists have been unwilling to take on the obesity epidemic, very rarely challenging the parameters of the epidemic or the biomedical conceptualization of obesity as a risk category (Moffat, 2010). The goal of this research has been to apply a biocultural critique to obesity approaches in urban, industrialized populations, particularly those studies that focus on the nutritional status outcomes as a means of locating future rates of chronic health in urban communities.

It has been my argument throughout this dissertation that biocultural anthropologists have laid the ground-work to summon a very strong and needed critique on obesity studies. The belief that obesity is a wide-spread problem with a relatively simple solution (eat less, exercise more) is called into question and demands a more nuanced approach if we are to make any real strides towards understanding, and perhaps even reducing, the concentration of health disparities between certain populations within urban, industrialized environments. I have argued in this dissertation that this is a particularly important endeavor for young people, who must contend with a variety of competing messages regarding their nutrition every day. Even more concerning is the emphasis that young people are putting on more superficial aspects of nutritional messages such as body size and how closely adolescent attitudes resemble sensationalized images of obesity that are seen on television. These images have played a persistent role in my research in Belfast.

For example, one night, while I was attending a youth club in West Belfast, the conversation settled on a television show called *The Fattest Man in Britain*. This show features a morbidly obese man living in the United Kingdom who successfully convinces the National Health Service to pay for his gastric by-pass surgery. The volunteers and

teenagers with whom I discussed this show all felt that this man was draining government dollars for a health condition that he himself has created through excessive eating and limited movement. The conversation about this show rapidly shifted to my own research topic and the worries among the group that this generation of children is going to cost the government unprecedented amounts of money due to their poor diets and lack of exercise. As we were having this discussion, I sat and watched young children eating sweets and drinking fizzy drinks that they had, only moments earlier, acquired at the youth club's shop. Perhaps this seems like an odd contradiction and indeed it felt like one to me as well. However, over the next few days I had the opportunity to interview youth workers in the club who told me that the shop is meant to deter children from leaving in the dark to walk down the road to buy foods at the local shop, which has been a common practice of young people in the past. The main youth worker, Ruari explained that he would really like to have healthier foods in the shop, but healthy foods would not keep the children in the club where he knows they are safe and well looked after.

In this single week, I was exposed to a wide range of nutritional attitudes and concerns in Belfast. From a belief that young people's diets and exercise practices put them in real danger; to the use of food to promote the safety of young people...it is a difficult topic to wrap one's head around indeed. However, stories like this have further supported an assertion that the conversation surrounding adolescent nutrition requires a great deal more complexity. If we examine multiple aspects all at once- from funding of community programs, to the extent of poverty in the city of Belfast; from the features of the physical environment that shape diet and exercise habits, to the less tangible but still important features of the sociocultural environment that shape nutrition practices-

perhaps the notion that obesity is an epidemic with a ready cure will become less prevalent.

The holistic picture of nutrition in Belfast that I have painted in this dissertation indicates that adolescents have both the nutritional knowledge to help them make healthy diet and exercise choices; yet, at the same time, they are exposed to messages that narrow their nutritional knowledge onto a single focus- body size. However, simple solutions to nutritional concerns should be treated with caution. While I would never demonize people who dedicate their daily lives to ensuring that young people get more exercise or have a healthy snack after school, I do question whether this reaches the core of the true problems associated with under or over nutrition in urban places. In Belfast, I believe that work can be done to diminish connections that adolescents are making between nutrition and body size, which have warped public health messages into concerns over their weight, and uncover connections that might be more meaningful. I also believe that increasing government funding for family support programs and improving communication between existing community resource providers will go a long way in reducing the extent of economic deprivation in the city, thus allowing for the long-term nutritional needs of young people to be met.

Appendix A (Questionnaire):

1.) How many days a week do you usually eat vegetables? (Tick only one box):

0 1 to 2 3 to 4 5 to 6 I eat vegetables every day

2.) How many portions of vegetables do you have in a normal day? (Tick only one box):

0 1 2 3 4 5 or more

3.) Please circle any vegetables that you have eaten over the past 7 days (CIRCLE all that you have eaten):

Carrots	Green Beans	Peppers	Mushrooms	Lettuce
Spinach	Cauliflower	Tomatoes	Onions	Peas
Parsnips	Avocado	Cabbage	Broccoli	Other:

4.) Where did you get the vegetables that you circled? (Tick all that apply):

<input type="checkbox"/> From someone in my family	<input type="checkbox"/> From a Friend or at a friend's house
<input type="checkbox"/> I bought them for myself at a store	<input type="checkbox"/> At Youth Club
<input type="checkbox"/> As part of a school meal	<input type="checkbox"/> At Church
<input type="checkbox"/> I ordered them at a restaurant or take-away	<input type="checkbox"/> Other:

5.) How many days a week do you usually eat fruit? (Tick only one box):

0 1 to 2 3 to 4 5 to 6 I eat fruit every day

6.) How many portions of fruit do you have in a normal day? (Tick only one box):

0 1 2 3 4 5 or more

7.) Please Circle any fruits that you have eaten over the past 7 days. (CIRCLE all that you have eaten):

Apple	Plums	Grapes
Pear	Berries	Melon
Orange	Kiwi	Peaches

Banana Tinned fruit Raisins Other:

8.) Where did you get the fruits that you circled (Tick all that apply):

- | | |
|--|---|
| <input type="checkbox"/> From someone in my family | <input type="checkbox"/> From a Friend or at a friend's house |
| <input type="checkbox"/> I bought them for myself at a store | <input type="checkbox"/> At Youth Club |
| <input type="checkbox"/> As part of a school meal | <input type="checkbox"/> At Church |
| <input type="checkbox"/> I ordered them at a restaurant or take-away | <input type="checkbox"/> Other: |
-

9.) How many days out of a week do you usually eat fried foods or sweets? (Tick one box):

- 0 1 to 2 3 to 4 5 to 6 I eat fried foods or sweets every day

10.) How many portions of fried foods or sweets do you have in a normal day? (Tick only one box):

- 0 1 2 3 4 5 or more

11.) Please circle any fried foods or sweets that you have eaten over the past 7 days. (CIRCLE all that you have eaten):

Chips	Pizza	Chocolate Bars
Fried Chicken/Chicken Goujons	Scones	Biscuits
Crisps	Sweets/gummies	Ice Cream
Fried Fish	Cake/buns/Tray Bake	Other:

12.) Where did you get the fried foods or sweets that you circled? (Tick all that apply):

- | | |
|--|---|
| <input type="checkbox"/> From someone in my family | <input type="checkbox"/> From a friend or at a friend's house |
| <input type="checkbox"/> I bought them for myself at a store | <input type="checkbox"/> At Youth Club |
| <input type="checkbox"/> As part of a school meal | <input type="checkbox"/> At Church |
| <input type="checkbox"/> I ordered them at a restaurant or take-away | <input type="checkbox"/> Other: |
-

13.) How many days out of a week do you usually eat meat or dairy foods (cheese, milk, yogurt, eggs)? (Tick one box):

0 1 to 2 3 to 4 5 to 6 I eat meat or dairy foods every day

14.) How many portions of meat or dairy foods do you have in a normal day? (Tick one box):

0 1 2 3 4 5 or more

15.) Please circle any meat or dairy foods that you have eaten over the past 7 days. (CIRCLE all that you have eaten):

Yogurt turkey)	Beef (including beef burgers)	Other Roast Meats (lamb, pork, ham,
Cheese chicken)	Chicken (not fried)	Luncheon Meats (ham, corned beef,
Eggs	Fish (not fried)	Bacon
Milk	Sausages	Other:

16.) Where did you get the meat and dairy foods that you circled? (Tick all that apply):

<input type="checkbox"/> From someone in my family	<input type="checkbox"/> From a Friend or at a friend's house
<input type="checkbox"/> I bought them for myself at a store	<input type="checkbox"/> At Youth Club
<input type="checkbox"/> As part of a school meal	<input type="checkbox"/> At Church
<input type="checkbox"/> I ordered them at a restaurant or take-away	<input type="checkbox"/> Other:

17.) How many days out of a week do you usually eat starch (breads, rice, pasta, potatoes)? (Tick one box):

0 1 to 2 3 to 4 5 to 6 I eat them every day

18.) How many portions of starch (breads, rice, pasta, or potatoes) do you have in a normal day? (Tick one box):

0 1 2 3 4 5 or more

19.) Please circle any starches that you have eaten over the past 7 days. (CIRCLE all that you have eaten):

Boiled Potatoes	Jacket Potatoes	Pasta	Rice
Oatmeal/Porridge			

Mashed Potatoes Brown bread White Bread Cereal Other:

20.) Where did you get the starches (bread, rice, pasta, or potatoes) that you circled? (Tick all that apply):

- | | |
|--|---|
| <input type="checkbox"/> From someone in my family | <input type="checkbox"/> From a Friend or at a friend's house |
| <input type="checkbox"/> I bought them for myself at a store | <input type="checkbox"/> At Youth Club |
| <input type="checkbox"/> As part of a school meal | <input type="checkbox"/> At Church |
| <input type="checkbox"/> I ordered them at a restaurant or take-away | <input type="checkbox"/> Other: |
-

21.) How many times in a week do you usually eat food from a take-away?

- 0 1 to 2 3 to 4 5 to 6 I eat food from a take-away everyday

22.) How many days out of a week do you usually drink beverages other than water? (Tick only one box):

- 0 1 to 2 3 to 4 5 to 6 I drink beverages other than water every day

23.) How many glasses or bottles of water do you drink in a normal day? (Tick only one box):

- 1 2 3 4 5 or more

24.) How many portions of non-water drinks do you have in a normal day? (Tick only one box):

- 0 1 2 3 4 5 or more

25.) Please circle the following drinks that you have had over the past 7 days. (Circle all foods that you have drunk):

Milk Tea Energy Drinks Hot Chocolate
Fruit Juice Coffee Fizzy Drinks Other:

26.) Where did you get the drinks that you circled? (Tick all that apply):

- | | |
|--|---|
| <input type="checkbox"/> From someone in my family | <input type="checkbox"/> From a Friend or at a friend's house |
| <input type="checkbox"/> I bought them for myself at a store | <input type="checkbox"/> At Youth Club |
| <input type="checkbox"/> As part of a school meal | <input type="checkbox"/> At Church |
| <input type="checkbox"/> I ordered them at a restaurant or take-away | <input type="checkbox"/> Other: |
-

27.) How many days in a week do you usually do physical activities? (Tick only one box):

- 0 1 to 2 3 to 4 5 to 6 I am physically active every day

28.) How many hours in a normal week are you physically active? (Tick only one box):

- 0 Less than 1 hour 1 to 2 hours 3 to 4 hours 5 or more hours

29.) How much time each week do you usually spend at the computer, playing video games, or watching television? (Tick one box):

- 0 Less than 1 hour 1 to 2 hours 3 to 4 hours 5 or more hours

30.) Over the past 7 days, how many hours of physical activity did you do each day?

- 0 Less than 1 hour 1 hour 2 hours 3 or more hours

31.) Please circle all of the activities that you have done over the past 7 days. (Circle all activities that you have done):

- | | | | | |
|--------------------|--------------|------------|---------|---------|
| Basketball/Netball | Cycling | Cricket | Rugby | Dancing |
| Football | Gaelic | Gymnastics | Walking | Hurling |
| Running/Jogging | Free Running | Swimming | Tennis | Other: |
-

32.) What is the main reason that you choose to participate in a physical activity? (Tick one box):

- It's fun To spend time with family As part of a class at school
 To spend time with friends To be healthy Losing weight/staying thin
 Other:
-

33.) When you buy or choose foods for yourself, which is most important for you? (Tick only one):

- | | |
|---|---|
| <input type="checkbox"/> Losing weight or staying thin | <input type="checkbox"/> My friends like it |
| <input type="checkbox"/> The price of the food | <input type="checkbox"/> It is healthy/ good for me |
| <input type="checkbox"/> It is what I have learned I should eat at school | <input type="checkbox"/> I've seen it on TV |
| <input type="checkbox"/> My family likes it | <input type="checkbox"/> Other: |
-

34.) On a normal weekday (Monday through Friday) which meals do you eat with your parents or do your parents prepare for you? (Tick all that apply)

None Breakfast Lunch Dinner

35.) On a normal weekend day (Saturday and Sunday) which meals do you eat with your parents or do your parents prepare for you? (Tick all that apply)

None Breakfast Lunch Dinner

36.) How many days a week do you usually eat school breakfast or dinner? (Tick only one box)

Never 1 2 3 4 Every day

37.) How many evenings a week do you usually go to youth club? (Tick only one box)

Never 1 2 3 4 5 Every day

38.) How many times a week do you go to Church? (Tick only one box)

Never 1 2 3 4 5 Every day

*******ON THIS PAGE ONLY TICK
ONE BOX PER ROW*******

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
39.) When I make choices about the foods I eat or activities in which I participate:	Take(s) no part of my daily life	Has no influence on my choices	Has very little influence on my choices	Strongly influences my choices	Is the most important influence on my choices
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40.) When I make choices about the foods I eat or the activities in which I participate: <u>My friends.....</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41.) When I make choices about the foods I eat or the activities in which I participate: <u>A teacher at school.....</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42.) When I make choices about the foods I eat or the activities in which I participate: <u>A priest, pastor, or member of my Church.....</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43.) When I make choices about the foods I eat or the activities in which I participate:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Movies, TV programmes, or advertisements.....</u>					
44.) When I make choices about the foods I eat or the activities in which I participate: <u>A youth worker or someone at a community centre.....</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Where do you learn about healthy eating and exercise? (Please write your answer below)

Do you think that nutrition should be a top priority for people your age living in West Belfast?
Why or why not? (Please write your answer below)

Appendix B (Interview Guide-students):

Interview Guide- 11-17 year olds

- 1.) Could you please tell me your name and your age?
- 2.) Since I am not from Northern Ireland or from Belfast...can you tell me a little about what it's like growing up in Belfast? What is your daily life like?
- 3.) Can you list for me the people and things that are most important in shaping the decisions that you make?
- 4.) Do you attend school? If so, which school? What is your year in school?
- 5.) Have you been taught about proper diet and exercise? Who taught you these things?
- 6.) Can you describe for me a healthy diet and healthy patterns of exercise?
- 7.) Do you think that you eat a healthy diet? Do you get as much exercise as you should? Why or why not?
- 8.) How do you make decisions about what to eat and what not to eat?
- 9.) Who would you say has the greatest influence over what you eat and how often you exercise?
- 10.) How do you spend most of your free time? Where would you say that you spend most of your time?
- 11.) What is your favorite food? What is your least favorite food?
- 12.) How often do you eat a meal with your family? With your friends? At school? At Church? Where else do you eat?
- 13.) Do you ever skip meals? Why/why not?
- 14.) How many days a week do you eat at a restaurant or take-away? Which restaurants and take-aways do you go to most often? Who do you usually go with?
- 15.) Do you think that people your age usually eat a healthy diet? Why or why not?
- 16.) What would keep a person your age from eating healthy foods?
- 17.) Do you think that people your age exercise enough?
- 18.) What would keep a person your age from getting enough exercise?
- 19.) Do you think that young people need to worry about nutrition? Are there other things are more important than nutrition and health?
- 20.) Do you ever eat school dinner? Why or why not?
- 21.) Do you think that you have the things that you need to help you eat right and exercise enough?
- 22.) What makes you decide to try new foods? Would you say that you are more likely to try a new food if it is healthy?
- 23.) Would you say that you are free to make your own choices about your diet and exercise? Why/why not
- 24.) Do you buy most of your own food or does someone else buy it for you?
- 25.) Who does your family grocery shopping?
- 26.) Are you on any sports teams?

27.) What problems could arise if someone doesn't have proper nutrition?

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