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THE NATURE AND PERCEIVED INFLUENCE OF LIFESTYLE DISCUSSIONS
WITH OLDER ADULTS IN PRIMARY CARE

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Public Health
at the University of Kentucky

By
Shoshana H. Bardach

Lexington, Kentucky

Director: Dr. Nancy E. Schoenberg, Professor of Behavioral Science

Lexington, Kentucky

2013

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ABSTRACT OF DISSERTATION

THE NATURE AND PERCEIVED INFLUENCE OF LIFESTYLE DISCUSSIONS WITH OLDER ADULTS IN PRIMARY CARE

Rationale: A healthy diet and physical activity help with disease prevention and disease management and can promote quality of life regardless of the age at which an individual begins engaging in these behaviors. Despite the value of these health behaviors, many older adults do not follow lifestyle recommendations. Given that older adults frequently interact with the healthcare system, primary care providers are well situated to counsel older adults to improve their health behaviors. Unfortunately, we do not know how to most effectively engage in this counseling. The purpose of this dissertation is to better understand whether and how providers discuss diet and physical activity with their older patients and how patients perceive their providers' communication regarding diet and physical activity.

Method: One hundred and four older adults, ranging in age from 65 to 95, consented to have their routine primary care visits recorded and immediately following their visits engaged in semi-structured interviews regarding current health behaviors and perceptions of their providers' diet and physical activity recommendations. Clinical visits were selectively transcribed and analyzed using qualitative description. Interviews were transcribed verbatim, coded, and analyzed through a process of constant comparison.

Findings: Discussions of diet and physical activity occurred in over two thirds of visits; recommendations for diet and physical activity occurred in less than half of these discussions. The majority of patients correctly recalled whether or not discussions of diet or physical activity had taken place. Patients reported that the likelihood of engaging in healthy diet and physical activity related to personal motivation and perceived confidence in the ability to make effective changes, both of which could be influenced by providers' recommendations. When providers did not discuss diet or physical activity, or mentioned these topics only briefly, patients often perceived the message that they should continue with their current behaviors.

Implications: These findings support an integrated theoretical framework, highlighting the role of autonomy and confidence, for understanding how providers can

promote patients' health behaviors. Implications for providers' training and the healthcare system are discussed.

KEYWORDS: Older Adults; Diet; Physical Activity; Communication; Qualitative

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June 14, 2013

THE NATURE AND PERCEIVED INFLUENCE OF LIFESTYLE DISCUSSIONS WITH
OLDER ADULTS IN PRIMARY CARE

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Chapter 1: Introduction

Research Motivation

In my graduate health communication seminar I learned about an anti-smoking campaign that linked low birth weight babies to smoking while pregnant. The campaign was designed on the premise that women would want to avoid having low birth weight babies and would therefore choose not to smoke. Unfortunately, the campaign did not have the desired effect. Many women thought positively about having low birth weight babies, perceiving that low birth weight babies would make the birthing process itself easier and would lessen the likelihood their child would become overweight. The proposed rationale to stop smoking did not resonate with the target audience. While it is hard to imagine that the campaign designers failed to engage in any exploratory work, somehow they failed to appeal to the target group's concerns and influence smoking behavior.

This failed campaign anecdote suggests a few very important lessons. First, it highlights the importance of not taking medical understanding or personal priorities for granted. While the campaign organizers clearly understood that low birth weight babies involve greater risk for negative health outcomes, viewers of the posters may not have shared this knowledge. Not associating negative health outcomes with low birth weight babies may have related to health literacy, but health literacy is certainly not a complete explanation. While the message may have had the intended effects if the women had been educated about the risks of low birth weight babies, to the dismay of health promotion educators, knowledge does not always equate to behavior. Further, the priorities of individuals devoted to health promotion may not be consistent with the priorities of the target populations. Even among women who may have recognized

medical drawbacks of having low birth weight babies, the perceived advantages of low birth weight may have had a greater draw. Alternately, some women may have valued the outcome of avoiding low birth weight babies, but other concerns may have taken priority (e.g. smoking as a stress reducer). They may also have recognized the difficulty in quitting smoking and may not have felt able or ready to face this challenge. Various other factors may also have impeded the women's desire or ability to stop smoking.

While this example is in the smoking-prevention arena, the lessons learned are applicable to a variety of health promotion contexts. This example stresses the importance of exploring communication and how intended messages are perceived. It also highlights the importance of not taking knowledge for granted, and, not assuming knowledge is sufficient to motivate behavior. For instance, consider a healthcare provider's instruction, "you may want to watch what you eat." Does the patient hear he/she should change his/her diet? Does he/she hear that he/she should think about his/her diet? Or, does he/she hear to keep track of what he/she eats but that he/she does not need to change it? Assuming the provider intended the first message, that the patient should improve his/her diet, does the patient know how to do this? Does the patient understand why he/she should improve his/her diet? Is this reason compelling for him/her? Perhaps the patient has a different perspective on diet given his/her personal experiences. Maybe he/she feels sick when he/she eats certain foods and so he/she tries to avoid those foods. Perhaps his/her spouse does all the cooking and he/she just eats whatever is provided. Maybe the patient only has a ride to the grocery store once a month and therefore cannot get fresh fruit and vegetables on a regular basis. Without considering the patient's perspectives and relationship with diet, the provider's intended

message may be lost. This vague instruction enables multiple patient interpretations which may or may not incorporate the providers intended recommendation.

Medical training focuses on the science of medicine, current best practices and guidelines for disease treatment and prevention, but often glosses over the art of medicine, how to convey this information and collaborate with patients to enable the realization of health and quality of life goals. Despite the wealth of information highlighting the benefits of healthy diet and physical activity, the research on interpersonal communication approaches to promote healthy diet and physical activity is rather limited (Fisher et al., 2002). Rates of meeting recommended levels of healthy eating and physical activity are very low, making the absence of this research particularly unfortunate. The existing research on the role of communication in promoting healthy eating and physical activity focuses simply on whether or not recommendations occurred and not the nature of these recommendations (Galuska, Serdula, Brown, & Kruger, 2002; Greenlund, Giles, Keenan, Croft, & Mensah, 2002). In the clinical context, providers are often frustrated by the perceived futility of their counseling efforts. Engaging in healthy eating and physical activity requires effort, regardless of an individual's knowledge, awareness, motivation, personal resources and supports, and community resources and opportunities. Whether this effort is worth it to the patient will vary based on the individual's personal values and goals. The success of the providers' counseling efforts will also likely vary based on the way they convey their recommendations and how what the patient hears relates to his or her personal motivations. Social and community factors may also play a role in the ability to make large lifestyle changes.

While providers are just one potential influence on older adults' health behaviors, older adults' frequent interactions with the healthcare system make providers a valuable resource for change. Old age can be a positive experience, and healthy behaviors play a critical role in realizing this future. To realize older adults' health and quality of life potential, every effort should be made to maximize providers' influence. In order to support providers' efforts to promote older adult wellness, in this dissertation I hope to advance understanding about the role of provider communication in promoting diet and physical activity during primary care visits. I hope that this study will shed some light on how providers convey diet and physical activity recommendations and how patients perceive and are influenced by these messages. As a result of this understanding I hope to be able to provide specific communication recommendations to providers.

Purpose and Specific Aims

Given the pervasiveness of poor diet and physical inactivity among older adults (Centers for Disease Control and Prevention, 1999, 2009), the profound role that health behaviors play in determining health outcomes (McGinnis, Williams-Russo, & Knickman, 2002), and the strong impact that health care providers may have on patients' health behaviors (Galuska, Will, Serdula, & Ford, 1999; Kreuter, Chheda, & Bull, 2000), providers should facilitate lifestyle change. Providers' frequent interactions with older adults and commitment to promoting health highlight the value of exploring what counseling approaches are effective with older adults. Lacking knowledge about effective counseling approaches, providers currently report that perceptions of counseling futility limit their health behavior counseling (Walsh, Swangard, Davis, & McPhee, 1999). Patient perspectives on provider recommendations for diet and physical activity may provide insight into how provider counseling can successfully lead to behavior

change, empowering providers to promote lifestyle changes. In this dissertation I strive to answer the following research question: **How do providers discuss diet and physical activity with older patients *and* how do patients perceive this advice?** This understanding is critical for informing provider best-practices regarding behavioral counseling. Self-determination theory will be used as a framework for the proposed inquiry.

In order to answer this question, this dissertation involves two specific aims.

Specific Aim 1: To identify whether and how providers discuss diet and physical activity with their older patients.

Specific Aim 2: To explore patient perceptions of whether and how these recommendations influence engagement in health behaviors.

A better understanding of the nature of lifestyle recommendations and their relationships to patient receptivity to behavior change has the potential to inform healthcare provider training. This enhanced training could enable providers to shape their recommendations in a more productive and appropriate manner, maximizing the future well-being of older adults. This ability to convey lifestyle recommendations effectively is especially critical given the emphasis by national organizations for an increased provider role in obesity and weight counseling (American Dietetic Association, 1997; Eckel, 1997; National Task Force on the Prevention and Treatment of Obesity, 2000; Rippe, 1998).

For providers to become more involved in health behavior counseling they require more evidence regarding the nature and effectiveness of current counseling efforts. The study findings regarding how the content and nature of recommendations relate to patient

recall and receptivity will serve as this evidence. The current study design is unique in that it combines objective accounts with patient perceptions, allowing for an in-depth exploration of how to effectively communicate physical activity and dietary recommendations with older adults. Understanding how the way diet and physical activity recommendations are conveyed influences patient recall and behavioral change intentions will enable providers in the future to counsel with greater confidence. This practice-based research study will culminate with a grand rounds educational session for providers to translate the research findings directly back into enhanced clinical practice.

Outline of Dissertation Chapters

In this first chapter I provided my motivation for the current research and presented the specific aims guiding my dissertation. In chapter 2, I review the literature on older adults' lifestyle behaviors, specifically diet and physical activity. This chapter includes the consequences of diet and physical activity, ways of defining and measuring diet and physical activity engagement, factors influencing health behavior choices, and theories of health behavior change. In chapter 3, I review literature on older adults' healthcare utilization and clinical health communication. This chapter explores the frequency of interactions older adults have with the health care system, including the extent to which prevention content is included, and reviews the relevant clinical health communication research. In this chapter, I highlight the importance of communication and review prior findings pertinent to prevention and older adults. Chapter 4 presents the study methodology, including the analysis methods. Chapter 5 presents the findings. Finally, in chapter 6 I discuss these results and their implications.

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Chapter 2: Older Adults' Lifestyle Behaviors

This chapter begins with a brief discussion regarding the definition of older adults. I then define lifestyle behaviors and describe some of the costs of technological progress and industrialization. I present definitions for diet and physical activity and share some of the key recommendations for older adults. I discuss the importance of lifestyle behaviors and some of the consequences of lifestyle behavior choices. I present data regarding current behavior choices of older adults, with a particular focus on older adults in Kentucky, and discuss common measurement approaches. Finally, I present theories of health behavior and discuss some of the key factors influencing health behavior choices.

Defining Older Adults

Older adults, those ages 65 and older, are anticipated to comprise roughly 20% of the U.S. population by 2030 (Centers for Disease Control and Prevention, 2003; Wan, Sengupta, Velkoff, & DeBarrow, 2005). Given the great heterogeneity of old age, there are no clear, consistent biomarkers to define old age; I have chosen the cut-off of 65 to indicate “old” because this is a commonly used cut-off in the developed world, and much of the existing research on old age utilizes this age demarcation, including physical activity recommendations for older adults (Nelson et al., 2007). The choice of age 65 to mark the beginning of old age initially reflected the point at which individuals were eligible for retirement (Roebuck, 1979) as this social transition was considered to be the beginning of old age. While retirement age is slowly increasing, currently full social security benefits are available at age 66, and this age will be increased to age 67 by 2027 (U.S. Social Security Administration, 2012) – most research still categorizes ages 65 and older as old age. Dietary guidelines with age distinctions use ages 50 to 70 and 70 and

older for age-specific guidelines (National Policy and Resource Center on Nutrition and Aging, 2004); by selecting ages 65 and older, dietary guidelines for older adults will also apply.

Defining Lifestyle Behaviors and Understanding the Cost of Technological Progress

I have chosen to use the term “lifestyle behaviors” to distinguish diet and physical activity decisions that relate to ongoing, continued behavioral choices, from single time point decisions such as cancer screening (Elwyn, Frosch, & Rollnick, 2009). The continuity of diet and physical activity makes changing these behaviors especially challenging since habits may be ingrained and practiced over a lifetime. However, the duration of these behaviors also increases the potential for great benefit.

Through technological progress and mechanization, the cost to consume large quantities of calories and nutrient sparse foods has decreased and the cost to engage in physical activity has increased (Philipson & Posner, 2003). In agricultural or industrial societies, work was often physically demanding and individuals were therefore paid to be active; today, in the post-industrial United States, most work does not involve physical activity; in fact, physical activity often comes at a cost (Philipson & Posner, 2003). With these changes, physical activity has gone from a more informal, ingrained aspect of daily life and work to more of a formal, frequently planned, process that may require structured environments such as health clubs (Scanlon-Mogel & Roberto, 2004). In the context of diet, not only have agriculture innovations reduced the cost of food, but as food production has moved from farms to factories, the production and ease of obtaining unhealthy foods has also increased (Lakdawalla & Philipson, 2009).

Today's culture of busy-ness may relate to a general preference for quick fixes and modern conveniences, creating a challenge for healthy lifestyle behaviors. Innovations such as the telephone, attached garages, ice makers, dishwashers, cars, and improvements in communications and computerization have made work and daily life easier; these developments are associated with a quest for convenience that reinforces a quick-fix culture associated with unhealthy food choices and a physically inactive lifestyle (Banwell, Hinde, Dixon, & Sibthorpe, 2005; Engström, 2004; Wansink & Huckabee, 2005). Experts on diet and obesity identified a reliance on convenience and prepared foods as a major contributor to unhealthy eating and obesity (Banwell et al., 2005). Part of this quick-fix culture is consumers' willingness to spend billions of dollars each year for weight loss products and surgical procedures rather than adopt healthier lifestyles (Fontanarosa, 1999).

Culture, however, does not operate in a vacuum (Richard, Gauvin, & Raine, 2011). The quick-fix culture making unhealthy behaviors easier than healthy behaviors is created and reinforced by macro and micro physical, environmental, and social environmental influences (Egger & Swinburn, 1997). I discuss these various sources of influence in greater detail in the theory discussion of this chapter, but it is important to keep in mind that while behavior is an individual choice, these choices can be shaped and constrained by intrapersonal, interpersonal, organizational, community, and policy/environmental factors (Robinson, 2008).

The Importance of Lifestyle Behaviors

While modifiable lifestyle factors represent the largest category of factors influencing health, quality of life, and mortality (McGinnis et al., 2002), lifestyle

behaviors such as healthy diet and physical activity remain suboptimal among older adults (Centers for Disease Control and Prevention, 1999, 2009). Concern over suboptimal dietary intake and physical activity levels among Americans of all ages has emanated from all sectors of the nation—from the White House and local legislatures to schools and private homes (Boehmer, Brownson, Haire-Joshu, & Dreisinger, 2007; Troutman, 2011; Ver Ploeg, 2010).

Given that individuals have power to alter their lifestyle behaviors *and* given the potential for engagement in healthier behaviors to have a wide array of benefits, exploring older adults' engagement in these behaviors has obvious merit. While the benefits are greater if positive health behavior changes take place earlier, benefits still exist if changes begin in later years (Chernoff, 2001; Christmas & Andersen, 2000). For instance, Song and Lee (2001) found that for individuals with myocardial infarctions, with an average age of 63, daylong programs including health assessments, educational sessions, and opportunities for questions resulted in improvements in diet and exercise behaviors as well as improvements in systolic blood pressure. Fiatarone and colleagues (1990) found that even among frail individuals in their nineties, an eight week weight training program can improve strength and gait speed. Strength training programs with older adults may help delay individuals from declining below important functional thresholds, enabling them to remain independent longer (Malbut-Shennan & Young, 1999). McMurdo and Rennie (1993) also identified benefits in strength and activities of daily living from seated-exercise programs with older adults. Another study of a Medicare health promotion package consisting of eight educational sessions reported that participation in this program was associated with improvements in physical activity and

diet (Mayer, Jermanovich, Wright, Elder, & et al., 1994). Previous research suggests that for adults ages 65 and older, even small improvements in diet, e.g. increasing fish consumption, may significantly lower the likelihood of strokes (Mozaffarian et al., 2005).

As individuals reach age 65, women have an average of 20.3 and men an average of 17.6 years of life remaining, allowing for sufficient time for physical activity and dietary changes to have an effect on functional status and quality of life (National Center for Health Statistics, 2010). Efforts to increase physical activity and improve dietary quality among older adults will also serve to meet the Healthy People 2020 goal to “improve the health, function, and quality of life of older adults” (U.S. Department of Health and Human Services, 2010).

Definitions and Recommendations

Physical activity refers to any bodily movement resulting in energy expenditure; exercise is a subset of physical activity that is planned, structured, and repetitive, often with the goal of physical fitness (Caspersen, Powell, & Christenson, 1985). While exercise may be an important part of physical activity for many individuals, evidence supports that lifestyle engagement in physical activity has similar benefits (Dunn, Andersen, & Jakicic, 1998).

Regardless of frailty or other conditions, the American College of Sports Medicine and the American Heart Association suggest that older adults should get some physical activity, though they may need to begin gradually (Haskell et al., 2007) and may want to incorporate strength and balance activities to reduce the risk of falls (American College of Sports Medicine Position Stand, 1998). This recommendation is consistent with the U.S. Department of Health and Human Services report (2008) which indicates

that some physical activity is better than nothing and that any amount can have health benefits, though the report also acknowledges that most health benefits increase with increasing intensity, duration, and frequency. For adults in general, the U.S. Department of Health and Human Service 2008 guidelines suggest the minimum recommended aerobic physical activity required to produce substantial health benefits in adults is 150 minutes of moderate-intensity activity per week, or 75 minutes of vigorous-intensity activity per week, or an equivalent combination of moderate- and vigorous-intensity physical activity (Centers for Disease Control and Prevention, 2008). Physical activity recommendations are modified based on an individual's existing health conditions. For individuals with multiple health conditions, the recommendations are less clear. Pate (1995) suggests that there is a dose response relationship with physical activity and health, whereby greater levels of activity result in greater benefits, particularly at lower levels of activity; in other words, the greatest potential benefit exists for the substantial portion of the population that is currently inactive.

Diet refers to the quality and quantity of foods consumed (Wirt & Collins, 2009). There are many different components of healthy diet, including sufficient numbers of fruits and vegetables, adequate intake of various nutrients, portion control, and limiting unhealthy foods. Dietary recommendations include having diets high in fruits, vegetables, and whole grains and low in saturated fat, trans fats, salt, cholesterol, alcohol, and added sugar (Toft, Kristoffersen, Lau, Borch-Johnsen, & Jorgensen, 2007; United States Department of Agriculture and United States Department of Health and Human Services, 2010). Other general dietary suggestions include fish at least twice a week, limiting intake of saturated fat to <7% of energy, trans fat to <1% of energy, and

cholesterol to <300mg/day (Lichtenstein et al., 2006). While in general these recommendations apply to older adults as well, given that older adults have decreased energy needs, they may require more nutrient-dense foods to reach their various vitamin and mineral requirements (Russell, Rasmussen, & Lichtenstein, 1999). In addition, older adults may want to limit their sodium intake to less than 1,500 milligrams a day (National Heart Lung and Blood Institute, 2012). To promote better quality diets, various organizations including the American Cancer Society and the Centers for Disease Control, have focused on increasing fruit and vegetable consumption in what was originally the “5-a-day campaign” which has now become ‘Fruits & Veggies – More Matters.’”

Fruit and vegetable consumption serves as an exemplar of dietary quality with adequate consumption suggesting healthier dietary choices; individuals who consume adequate amounts of fruits and vegetables are also more likely to snack on healthy foods and use nutrition labels when making food purchases, eat more whole grains, and eat red meat more sparingly than those who do not get adequate consumption of fruits and vegetables (Jacques & Tucker, 2001; Staser et al., 2011). In addition to the association with other diet quality variables, research also indicates that fruit and vegetable consumption reduces the risk of developing disease (Block, Patterson, & Subar, 1992; Gandini, Merzenich, Robertson, & Boyle, 2000).

Consequences of Diet and Physical Activity

This section will provide an overview of some of consequences of diet and physical activity. The consequences of these lifestyle behaviors can be viewed in the positive (how healthy diet and physical activity promote health and reduce negative

health outcomes) and in the negative (how poor diet and physical inactivity relate to negative health outcomes).

Healthy diet and physical activity have significant and widespread health and quality of life benefits (Ruano et al., 2011; Warburton, Nicol, & Bredin, 2006). These behaviors have demonstrated benefits for disease prevention, disease management, and quality of life across ages (American College of Sports Medicine Position Stand, 1998; Jacobs, Sluik, Rokling-Andersen, Anderssen, & Drevon, 2009). Healthy diet and physical activity can help delay the onset of disability and dysfunction, improve functionality, and relieve disease symptomology (Drewnowski & Evans, 2001; Penninx et al., 2001). Healthy diet and physical activity also benefit mental health, psychological well-being, cognitive function, and vitality (Scarmeas et al., 2009; Strawbridge, Deleger, Roberts, & Kaplan, 2002; Wayne et al., 2006). These benefits exist even for older adults with chronic conditions; for instance, Brown and colleagues (2003) found that the odds of having 14 or more days where the individual felt physically or mentally unhealthy among those with recommended levels of physical activity, in comparison to those who were inactive, was .67 for adults ages 18 to 44, .40 for adults ages 45 to 64, and .41 for adults ages 65 and older. This decreased likelihood for physically active individuals to experience unhealthy days was observed when adults had arthritis or other chronic conditions.

Physically active older adults and those with a healthy diet generally experience lower healthcare utilization and associated costs with potential benefits for both the individual and the healthcare system overall (Buchner, Beresford, Larson, LaCroix, & Wagner, 1992; Chernoff, 2001; Nelson et al., 2007). For instance, on a societal level, the

costs of physical inactivity are approximately 24 billion dollars or 2.4% of the United States health care expenditures. Costs for obesity in 1995 totaled roughly 70 billion dollars. These costs are estimated based on direct costs results from treatment morbidity and indirect costs such as forgone earnings and lost productivity due to premature mortality and work days lost (Colditz, 1999). Thus, in total, the costs of inactivity and obesity are estimated to account for 9.4% of the national health care expenditures in the United States (Colditz, 1999), over 90 billion dollars in direct health care costs per year (Manson, Skerrett, Greenland, & VanItallie, 2004).

It is estimated that poor diet and physical inactivity are the second leading causes of death in the United States (Mokdad, Marks, Stroup, & Gerberding, 2004). Mokdad and colleagues (2004) used mortality records from 2000 to identify causes and numbers of deaths; causes were calculated by multiplying estimates of the cause-attributable fraction of preventable deaths as identified in the literature, with the total mortality data. Their computations led to the estimate that poor diet and physical activity accounted for 16.6% of all deaths in the year 2000 (Mokdad, Marks, Stroup, & Gerberding, 2004). Numerous researchers have found that poor diet and physical inactivity are associated with increased susceptibility to various diseases, including heart disease, metabolic syndrome, and obesity (Bingham et al., 2008; Mendoza, Drewnowski, & Christakis, 2007; Samad, Taylor, Marshall, & Chapman, 2005) and reduced quality of life (Rejeski, Brawley, & Shumaker, 1996; Rejeski & Mihalko, 2001).

Older Adults' Current Diet and Physical Activity Behaviors: A Kentucky Perspective

The need to improve diet and physical activity among older adults is evident nationally, but is particularly critical in Kentucky (Centers for Disease Control and Prevention, 2007, 2010). Nationwide 24.8% of adults get five or more fruits/vegetables a day, compared to only 19.7% of Kentuckians. For adults ages 65 and older, a quarter of Kentuckians (25.4%) eat five or more fruits/vegetables a day, compared to 30.0% of adults 65 and over nationwide (Centers for Disease Control and Prevention, 2007).

While consuming less than the recommended intake of fruits and vegetables, most Americans also consume far more than the recommended daily intake for suboptimal foods (Krebs-Smith, Guenther, Subar, Kirkpatrick, & Dodd, 2010; Popkin & Nielsen, 2003). Cohen, Sturm, Scott, Farley, and Bluthenthal (2010) surveyed adults in two regions in the U.S. and found that the mean daily number of calories from cookies, candy, salty snacks, soda, and alcohol exceeded 400 in both regions, representing 1.6 to 2.2 times the recommended levels of discretionary calories given gender, age, and activity levels; further, the mean number of fruit/vegetable servings per day was 10% to 20% lower than the 5-a-day target. Consistent with this overconsumption of suboptimal foods, Bachman, Reedy, Subar, & Krebs-Smith (2008) found that less than 10% of American's grain consumption is from whole grains. While older adults may adhere to dietary recommendations slightly better than younger adults, poor diet is still pervasive (Centers for Disease Control and Prevention, 2008, 2009). Foote, Giuliano, and Harris (2000) surveyed adults ages 51 to 80 and found that consumption of fat exceeded recommendations, but that intake of various vitamins, dairy, and grains were below the

average requirements for the majority of the surveyed population. They also found that only roughly half of those surveyed consumed recommended servings of vegetables (49% of women, 40% of men) and fruits (53% of women, 48% of men).

Nationwide, 25.4% of American adults report no leisure-time physical activity within the last 30 days, compared to 30.1% of Kentuckians (Centers for Disease Control and Prevention, 2010). Rates of physical inactivity in Kentucky increase with age; Behavioral Risk Factor Surveillance System 2008 estimates for Kentucky indicate that while only 21.6% of 18-24 year olds report no leisure time physical activity within the last 30 days, that percent rises to 40.2% for adults ages 65 and over. In contrast, the US national average for the percentage of adults 65 and over reporting no leisure time physical activity within the past 30 days is 32.7% (Centers for Disease Control and Prevention, 2010).

While I was unable to find a state-based comparison, I also explored the intensity of physical activity among older adults who report some level of physical activity engagement. Among older adults age 65 and over in the United States, self-reported rates of people participating in moderate physical activity range from 39.3% to 51.2%, depending on the criteria used (Centers for Disease Control and Prevention, 2008; MMWR, 2008) and only 10% of adults over the age of 65 reported engaging in any forms of vigorous physical activity (Cohen-Mansfield, Marx, & Guralnik, 2003). An understanding of various measuring approaches helps to inform these estimates of diet and physical activity engagement.

Measuring Physical Activity and Diet

Methods Used to Measure Physical Activity

Physical activity can be measured through a variety of methods, each of which varies in terms of validity, reliability, and feasibility of use. Both direct and indirect measures are available. Direct measures include pedometers, which count steps, and accelerometers, which measure motion and can also measure intensity and time (Bauman, Phongsavan, Schoeppe, & Owen, 2006). Other measures, such as doubly labeled water, oxygen uptake, and heart rate, are sometimes considered direct because they are objective, but actually measure physical fitness rather than physical activity (Bauman et al., 2006). Direct measures can also be used on an ecological level, such as motion sensors to evaluate use of a walking trail (Bauman et al., 2006). Indirect measures include self-report questionnaires or interviews and can also include activity logs and diaries (Bauman et al., 2006).

While direct measures are the most objective, they are also costlier than indirect measures. Pedometers and accelerometers may capture all levels of intensity of physical activity, but there may be feasibility issues (Tudor-Locke & Myers, 2001). For instance, it may be challenging to get individuals to agree to wear these devices or to remember to put them on after removing them; some individuals may also find them uncomfortable or aesthetically unappealing (Audrey, Bell, Hughes, & Campbell, 2012; Rooney, Gritt, Havens, Mathiason, & Clough, 2005). These factors may lead to decreased use, which can create challenges for interpretation. These direct measures are also poor at capturing certain forms of physical activity such as cycling and cannot be used for water-based activities such as swimming or water aerobics (Bauman et al., 2006). Pedometers are

also poor at capturing upper body activity and may have trouble accurately capturing number of steps when individuals have slow, shuffled gait, which becomes increasingly common in old age (Strath, 2010).

Self report, via questionnaire or diary, is the most cost-effective option and may be reliable over shorter time periods (Jacobs, Ainsworth, Hartman, & Leon, 1993), and tends to be more reliable for shorter questionnaires (Shephard, 2003). Self-report assessments may be valuable for classifying individuals based on physical activity status, but may be less sensitive in terms of providing details regarding exercise dosage (Shephard, 2003). Given their low cost, self-report approaches are often chosen. However, accuracy is limited by recall biases, social desirability responses, and depending on report instrument, may also involve floor effects, particularly for more sedentary individuals and for spontaneous or incidental activities (Tudor-Locke & Myers, 2001). Questionnaires will differ in their ability to capture different domains of activity (Jacobs, Ainsworth, Hartman, & Leon, 1993) and can be problematic for assessing walking (Tudor-Locke & Myers, 2001), which is a common form of physical activity, particularly among older adults (Melanson & Freedson, 1996).

Choosing an appropriate physical activity assessment requires consideration of the study purpose. For instance, interventions will require a measure that is sensitive to change, rather than a measure that is good at basic classifications of activity level, and the need for precision will vary based on the study question. The value to the research of accurately being able to describe different attributes of physical activity - including frequency, duration, intensity, type of activity, and domains or settings where performed - should be carefully considered (Bauman, Phongsavan, Schoeppe, & Owen, 2006).

Regardless of purpose, questions should be clear, specific, direct, and organized, to ensure face validity (Paffenbarger, Blair, Lee, & Hyde, 1993).

Ecological factors on the neighborhood level, both perceived and actual environmental characteristics that can influence physical activity engagement, can also be measured (McCormack et al., 2004). For instance, GIS (geographic information system) technology is a newer approach for examining the built environment; use of GIS varies in the type of geographical data that is used and can include distances to various opportunities for physical activity such as parks and exercise facilities, incorporating challenges in reaching those locations such as hills and traffic, as well as distances to retail establishments (Butler, Ambs, Reedy, & Bowles, 2011; Nagel, Carlson, Bosworth, & Michael, 2008; Troped et al., 2001). Other neighborhood level factors that are examined in relation to physical activity include poverty, perceived neighborhood problems such as graffiti, abandoned buildings, and safety problems (Cunningham & Michael, 2004; Nagel et al., 2008).

Finally, while this section has focused on measures of physical activity, it is also possible to examine activity level by looking at its inverse - sedentary behavior. Sedentary behavior can be assessed by looking at time spent in the car (Frank, Andresen, & Schmid, 2004), watching television (Clark et al., 2009), using the computer, reading, or sitting and talking or listening to music (Sugiyama, Healy, Dunstan, Salmon, & Owen, 2008).

Methods Used to Measure Diet

Dietary research has an almost exclusive reliance on self-report measures. Self-report measures can include both questionnaires and diaries. Questionnaires typically

involve less participant burden than dietary records where participants keep a record of all food and beverages and the quantity of each that they consume over a day or longer (Willett, 2001). Dietary records may also have the disadvantage that the knowledge that food choices will have to be recorded may influence food consumption (Vuckovic, Ritenbaugh, Taren, & Tobar, 2000). Questionnaires can take the form of recalls, where participants are asked to report everything they consumed in a given period of time, usually 24 hours, or food frequencies where individuals are given a list of foods and asked to indicate how often they eat each food, with portion size information sometimes included (Campbell & Dodds, 1967; Zulkifli & Yu, 1992). There is some research conducted with observational and photographic methodology, but these methods may be challenging when trying to capture ongoing, habitual behavior in various settings (Hongu et al., 2011). Dietary research is also susceptible to the limits of self-report as discussed in the context of physical activity, e.g. social desirability and recall biases. More objective measures such as cholesterol and blood sugar measurements can also be used to assess diet, but they actually evaluate dietary outcomes and not diet per se. Hair isotopes can also be used to provide some insight into certain aspects of diet, such as how much meat or fish is consumed (Airey, 1983; Roy, Hall, Mix, & Bonnicksen, 2005).

Diet can also be evaluated by studying the food environment. For instance, food inventories can be conducted to provide information about what foods are available within the home; recent technology allows for these inventories to be done with the assistance of Universal Product Code scanners (Weinstein, Phillips, MacLeod, Arsenault, & Ferris, 2006). Prior research has indicated this shelf-inventory approach has high sensitivity and specificity with older adults (Miller & Edwards, 2002). The food

environment can also be examined on the community level. For instance, the Nutrition Environment Measures Study created an observational measure for grocery and convenience stores to examine the availability of healthy options, their price, and their quality (Glanz, Sallis, Saelens, & Frank, 2007). The food environment can also be viewed based on what eating establishments are available and the density of options; this information can be derived from individual reports or from Geographic Information System (GIS) characterizations of the environment (Moore, Diez Roux, & Brines, 2008). The measurement approach researchers select may be influenced by the factors identified in the health behavior theory/theories guiding the research endeavor.

Theories of Health Behavior

Health behavior theories provide a framework for understanding how various factors influence an individuals' engagement in physical activity and dietary behaviors. While not an exhaustive list of health behavior theories, in this section I discuss many of the most prominent theories of health behavior. This discussion highlights constructs researchers have proposed influence health behavior and identifies ways of understanding this influence. I discuss a range of theories and models to demonstrate the complexity of and range of approaches for understanding health behavior. In the context of this discussion, I explain the theory selection that guided my interview questions.

Many of these health behavior theories share common elements or predictors, but there are also a number of distinctions. The Theory of Reasoned Action (TRA) suggests that attitudes, relating to outcome expectancies and value, and subjective norms, beliefs about what you think others believe about the given behavior and your motivation to comply, predict behavioral intentions, which subsequently predict behavior (Ajzen &

Fishbein, 1980). The Theory of Planned Behavior (TPB) is an extension of the TRA that adds the additional factor of perceived behavioral control and consequently is more appropriate for investigating physical activity engagement and healthy eating behavior (Ajzen, 1985). Social Cognitive Theory (SCT) suggests that behavior is explained by the interaction between personal factors, the environment, and behavior, and emphasizes the importance of factors such as self-efficacy, outcome expectations, and goals (Bandura, 1986). The Health Belief Model (HBM) suggests that health behaviors are influenced by susceptibility, severity, perceived benefits and barriers, cues to action (which could include a doctor's recommendation), and self-efficacy (Becker, 1974; Janz, Champion, & Stretcher, 2002). A 2010 meta-analysis of the HBM indicates that perceived barriers and benefits are the most influential factors within the HBM, but given the limited influence of severity and the seeming lack of influence of susceptibility suggests that future research should explore greater complexity within and between these factors (Carpenter, 2010).

In addition to these theories that identify predictive factors, there are also theories that provide some insight into the process of behavior change. Two notable theories in this area include the Transtheoretical Model (TTM), also referred to as the stages of change model, and the Precaution Adoption Process Model (PAPM). The TTM suggests that individuals move through stages of precontemplation (not engaged in the behavior and not considering a change in the next six months), contemplation (not engaged in the behavior, but intends to make a change within the next six months and is considering the pros and cons of engaging in the new behavior), preparation (actively planning a behavior change in the immediate future or plans to increase their engagement in the given

behavior), action (changes have occurred in the last six months), maintenance (has engaged in the behavior for six months or longer), and termination (behavior has been incorporated into the individuals' lifestyle), though movement between these stages is not always linear (Marcus & Simkin, 1994; Prochaska & Velicer, 1997). Fluctuations between stages may be particularly likely among older individuals with multiple health conditions, whose health behavior motivation and ability may change as their disease status and symptoms evolve and/or fluctuate. An awareness of an individual's stage of change maximizes the likelihood of success when trying to support individuals to improve health behaviors (Adams & White, 2003; Marcus & Simkin, 1994; Prochaska & Velicer, 1997). For instance, individuals in the pre-contemplation stage should be assisted to increase their awareness of the benefits of health behavior change, whereas those in the action and maintenance stages should be assisted to develop strategies to integrate their healthier behaviors into their lifestyles.

The PAPM suggests that when individuals begin a protective health behavior they move through the stages of unaware, unengaged, undecided, decision, acting, and then maintenance; the PAPM is utilized for more deliberate actions, e.g. the decision to engage in an exercise program or begin a diet, rather than gradual physical activity patterns or dietary changes (Weinstein, Sandman, & Blalock, 2009). Similar to the TTM, an individual can move forward or backward within these stages; in contrast to the TTM the focus in this model is on mental states not time periods until intended action. Both the TTM and PAPM suggest that factors influencing physical activity adoption will likely differ from those that influence physical activity maintenance and relapse (Weinstein et al., 2009). This assertion is supported by Williams and colleagues (2008) who compared

predictors of physical activity adoption with those of physical activity maintenance among 205 initially sedentary adults who were enrolled in a home-based physical activity program. They found that factors relating to physical activity engagement differed based on whether the individual was in the adoption or maintenance phase.

Similarities among these various health behavior theories include an emphasis on the role of perceived outcomes, referred to as outcome expectancies in the TRA, TPB, and SCT and perceived benefits and barriers in the HBM; the importance of self-efficacy, referred to directly in SCT and the HBM and related to the concept of perceived behavioral control in the TPB; and a tendency to minimize or overlook the role of contextual or environmental variables. To address this oversight, recent research has examined diet and physical activity in an ecological context, addressing biological, psychosocial, *and* environmental factors on micro, meso, and macrosystem levels that interact to influence engagement in physical activity (Spence & Lee, 2003).

Ecological frameworks allow the focus to move beyond the individual to also encompass the broad array of social, economic, political, and environmental factors that may influence health behavior choices (Breslow, 1996; Brofenbrenner, 1979).

Ecological theories recognize that these various environmental factors interact with individual determinants to shape behavioral choices (Satariano & McAuley, 2003). SCT is an example of an ecological theory as it suggests a process of reciprocal determinism, where personal and environmental factors interact (Satariano & McAuley, 2003).

Story, Neumark-Sztainer, and French (2002) discuss the range of individual and environmental factors that influence adolescent eating behaviors and food choices. They describe four levels of influence. The first level of influence refers to individual or

intrapersonal influences including psychosocial factors such as food preferences, taste and sensory perceptions of food, health and nutrition, meaning of food, self-efficacy, and knowledge; biological factors such as hunger and sex; and lifestyle factors such as time, convenience, and cost. The second level of influence refers to social environmental or interpersonal factors, such as family and peers. The third level of influence refers to the physical environment or community settings such as schools, fast food outlets, convenience stores, and worksites. The final level of influence refers to macrosystem or societal factors such as the mass media, marketing and advertising, social and cultural norms, and local, state, and federal food policies, laws, and regulations (Gregson et al., 2001; Hughes, 2006; Pate et al., 2000; Robinson, 2008; Story et al., 2002; Swinburn, Egger, & Raza, 1999). These various levels of influence can be explored within the context of alternate health behaviors, such as physical activity, and with different populations, such as older adults. Interventions that address multiple levels will maximize their effectiveness. Research has supported this ecological perspective, demonstrating that both individual and social and physical environment determinants all influence physical activity (Giles-Corti & Donovan, 2002; Levy & Myers, 2004; Trost, Owen, Bauman, Sallis, & Brown, 2002).

Another theory of health behavior that focuses on how individuals respond to health risk messages is the Extended Parallel Process Model (EPPM). The EPPM suggests that health risk messages have message components of self-efficacy, response efficacy, susceptibility, and severity (Witte, 1992). When exposed to health risk messages, individuals evaluate the threat, based on perceived susceptibility and severity,

and efficacy of the recommended response, based on perceived self-efficacy and response efficacy. If no threat is perceived this leads to no response. If perceived efficacy and perceived threat are high there is a danger control response, whereby the individual takes action to protect himself or herself against the threat. This is referred to as “protection motivation.” Under a protection motivation response the individual typically accepts the message, leading to changes in his attitude, intention, and behavior, as suggested by the recommendation. If, however, perceived efficacy is low and perceived threat is high, there is a fear control response; this is referred to as defensive motivation. Under a defensive motivation response, the individual typically rejects the message through defensive avoidance (blocking further thoughts or feelings about a given threat, distorting or ignoring further information), denial (refusing to believe they could experience the threat), or reactance (saying the message or source of the message is trying to manipulate them, leading to rejection or anger). As long as perceived efficacy is greater than perceived threat, individuals will engage in danger control processes. The EPPM has a sequential assumption that a certain level of threat needs to be perceived before people will consider efficacy (Witte, 1992). While the EPPM has typically been utilized with written message based campaigns, the elements of the EPPM may be equally relevant to verbal communication of health risk messages. Applying the EPPM to physical activity or healthy eating, the message would need to include elements that indicate the threat or risk of inactivity or poor diet as well as efficacy information about opportunities and ability for physical activity and healthy eating.

While this discussion presents a number of different health behavior theories, I chose Self-Determination Theory (SDT) as a guiding framework for the present study

because it focuses on factors that may be modifiable by provider counseling with the potential to influence patient behavior. Self-Determination Theory (SDT) postulates that if autonomy, competence, and relatedness are maximized, motivation is more likely to be internalized and behavior change initiated and maintained (Williams, Deci, & Ryan, 1998). Autonomy relates to personally endorsing the value of the behavior. The likelihood of such an endorsement may be increased if a meaningful rationale for change is provided, the provider enthusiastically emphasizes the importance of the behavior (Fox et al., 2009), the patient feels he or she has a sense of choice, and the behavior or expected outcomes are aligned with the patient's other values (American College of Sports Medicine, 1998). Competence refers to the confidence and skills to engage in the behavior, which may involve both self-efficacy as well as supportive resources or tools, including concrete steps for initiating a new behavior (Ryan, Patrick, Deci, & Williams, 2008). Relatedness refers to a sense of connection, trust, and support, in this context with the provider (Ryan et al., 2008).

The choice of SDT as a guiding framework is not intended to imply that other factors or levels of influence are unimportant in patients' health behavior choices; rather, SDT helps narrow the focus on factors that could more feasibly be addressed through patient-provider communication. Provider recommendations may acknowledge community resources and environmental constraints and opportunities, but these factors are unlikely to change as a result of patient-provider exchanges. How the provider communicates, however, may plausibly influence patients' autonomy, competence, and relatedness. Further, SDT has been used in health behavior change research to promote

physical activity and diet (Fortier, Sweet, O'Sullivan, & Williams, 2007; Senecal, Nouwen, & White, 2000).

Prior research has highlighted that knowledge does not necessarily equate to behavior (Kennedy, Regehr, Rosenfield, Roberts, & Lingard, 2004; Rimal, 2000). Advice without specifics may not be effective; setting goals and developing an action plan are helpful for health behavior change, yet these factors do not seem to have been incorporated into theoretical models explaining the influence of provider counseling (Hillsdon, Thorogood, White, & Foster, 2002; Orleans, 2000). SDT provides a lens to explore how a provider's recommendation may go beyond education to motivating and facilitating behavior change.

Factors Influencing Health Behavior Choices

There are a variety of personal, social, and environmental factors that influence health behavior and behavior change (Flay & Petraitis, 1994; Matthews, Peden, & Rowles, 2009). Using SDT as a guiding framework, I discuss some of these factors in the context of diet and physical activity among older adults. While I explore the role of each of these factors individually, these factors tend to interact to influence health promotion behaviors (Bandura, 2004). It is also helpful to remain cognizant that these are just a sample of the factors that can influence health behavior choices of older adults.

Autonomy

Autonomy is the desire to be in control of one's own actions. Personally endorsing the value of the suggested behavior enhances one's self of control and increases motivation to make changes. Endorsing the value of the recommended behavior is more likely if the patient is aware of the benefits of diet and physical activity,

or the costs of unhealthy behaviors, and believes these benefits relate to his or her health related concerns. I will discuss both awareness and health-related concerns here in greater depth.

Awareness.

Awareness includes not just factual knowledge and understanding about the benefits of diet or physical activity in general, but also involves applying this knowledge to one's own circumstances. While people may appreciate that healthy diet and exercise in general are considered beneficial, limitations may occur in understanding how to eat or exercise to maximize benefits for one's specific circumstances and conditions.

Understanding the benefits of and approaches to health behaviors for one's self are positively associated with increasing one's engagement in those behaviors (Greene et al., 2004; King, 2001; Kolodinsky, Harvey-Berino, Berlin, Johnson, & Reynolds, 2007), whereas lacking this awareness can be a barrier to participation (Cohen-Mansfield, Marx, & Guralnik, 2003; Resnick, 2000). Research has indicated that most older adults are aware that physical activity is beneficial (Grant, 2001); but they may still have some uncertainty regarding how health behaviors benefit them personally or what they need to do to realize these benefits.

Many individuals may be unclear what physical activity recommendations apply to them; this may be especially challenging for individuals with disease profiles that alter the healthy adult recommendations. For individuals with multiple chronic conditions, understanding how the recommendations should be adapted to their personal reality may be even more daunting. These recommendations may be further muddled as disease symptoms fluctuate, and optimal activity modes and dosages may vary for one individual

over time. Similar challenges exist for understanding optimal diets when different health conditions may impact what foods should be consumed or avoided, with recommendations sometimes hard to reconcile. Some individuals may believe that their current health behaviors are sufficient or that because they are healthy they would not benefit from improvements (Cousins, 2000); these individuals may lack a personal perceived need for healthy diet and physical activity and therefore may not eat as well or may be less active (Booth, Bauman, & Owen, 2002; Cohen-Mansfield et al., 2003). Individuals may be more motivated to engage in healthy diet and physical activity if the relevance to their own health is immediately apparent. Individuals with chronic conditions may be aware of the limitations and precautions in their physical activity abilities due to their conditions, but may remain unaware of safe and beneficial approaches to increase their physical activity. For those individuals who already have generally healthy diets and are physically active, small behavior modifications may still result in health and quality of life benefits; further, an awareness of the value of these behaviors may have future benefits if the need to re-establish these healthy habits arises (Buman, Daphna Yasova, & Giacobbi, 2010; Powell, Paluch, & Blair, 2011).

Health Related Concerns.

Health conditions are part of most older adults' lives, and health related concerns can serve as both a barrier to and motivator for engaging in physical activity and healthy eating (Cohen-Mansfield et al., 2003; Cousins, 2000). Health-related concerns can include the health risks and benefits of engaging in the recommended behavior and illness or disability barriers to behavior change. Grant (2001) interviewed 15 adults ages 70 and older and found that individuals may overestimate the potential risks of activity

and underestimate their abilities. Clark (1999) conducted a survey among urban primary care patients over the age of 55 and found that two thirds of participants indicated physical symptoms (such as knee, back, or hip pain), fear of chest pain, or shortness of breath, limited the extent to which they exercised. Similarly Chinn and colleagues (1999) found that among the almost two thirds of adult respondents who did not feel they exercised at desired levels, illness/disability was frequently cited as a barrier. Among the oldest age group, adults ages 65-74, 52% acknowledged this barrier. Rhodes and colleagues (1999) echoed this finding, suggesting that poor health and perceived physical frailty may be the largest barriers to exercise adoption and adherence in older adults. Forkan and colleagues (2006) found that poor health and shortness of breath were among the most frequently cited barriers to engaging in home exercise programs – and that barriers were more predicting of exercise adherence than were motivating factors. Similarly, Verbrugge and Patrick (1995) suggested that a wide array of conditions impose functional limitations for older adults, making exercise engagement more challenging. Older adults may also devalue health behaviors if their health conditions lead to the belief they will not live long enough to appreciate the benefits of positive health behaviors (Cousins, 2000). Diet can also be challenged by poor health when individuals have a reduced ability to procure, prepare, or consume healthy foods (Finley, 1997). These limitations impacting the ability to engage in a healthy diet may be more likely with age, as vision declines, dental status often deteriorates, and ability to taste and smell may worsen (de Jong, Mulder, de Graaf, & van Staveren, 1999; Griep et al., 1996; Schiffman & Graham, 2000; Sheiham, Steele, Marcenes, Finch, & Walls, 1999)

In contrast, health conditions and concerns may help individuals recognize the benefits of healthy diet or physical activity and serve as motivation to eat better or increase activity (Belza et al., 2004; Cohen-Mansfield et al., 2003). Individuals with chronic conditions, or those consciously trying to prevent certain conditions, may recognize the therapeutic benefits of healthy diet or enhanced physical activity and may value these benefits more so than the perceived threats or costs of engaging in the behavior (Albright et al., 2000; Patterson, Kristal, Lynch, & White, 1995; Patterson, Kristal, & White, 1996). For instance, concern over the development of osteoporosis may increase one's likelihood of engaging in exercise or consuming recommended amounts of calcium (Cousins, 2000). Similarly, a cancer diagnosis may serve as an impetus for better self-care and lead to initiation of exercise and dietary changes (Demark-Wahnefried, Aziz, Rowland, & Pinto, 2005; Satia et al., 2004). Older adults are more likely than young adults to view health as a motivator to engage in health behaviors (Campbell, MacAuley, McCrum, & Evans, 2001; Scharff, Homan, Kreuter, & Brennan, 1999). Similarly, individuals may view health concerns as motivation for healthy eating, to support weight loss, to manage disease symptoms, to prevent the development of disease complications or additional conditions, and to maximize quality of life (Falk, Sobal, Bisogni, Connors, & Devine, 2001; Tessaro et al., 2006; Zunft et al., 1997).

Competence

Competence refers to an individual's confidence and ability to make effective changes (Ryan, Patrick, Deci, & Williams, 2008). While various factors can impact competence, I focus on two critical components here: self-efficacy and the environment. Regarding environment, both the physical and social environment can impact confidence

by creating, or constraining, opportunities and resources for change. The environment therefore relates both to perceived ability to make changes and to actual ability to change behavior. I discuss self-efficacy and environment in more detail here.

Self-efficacy.

In the context of diet and physical activity self-efficacy refers to one's confidence in his/her ability to eat healthily or be physically active (Bandura, 1977). Self-efficacy is one of the strongest and most reliable predictors of participation in healthy behaviors (AbuSabha & Achterberg, 1997; Sherwood & Jeffery, 2000). Having strong self-efficacy beliefs regarding physical activity is related to a greater likelihood of being and remaining physically active (McAuley et al., 2007; Nies & Kershaw, 2002; Stutts, 2002). Older adults with chronic conditions may be more likely to have reduced physical activity self-efficacy due to exaggerated fears about falling, pain, and/or cardiac events during physical activity (Tinetti, Mendes de Leon, Doucette, & Baker, 1994; van Lankveld, Näring, Bosch, & van de Putte, 2000). Successfully making changes in one domain (e.g. exercise) may increase an individual's behavior change self-efficacy and make it more likely that he or she will make changes in other domains (e.g. diet) (Tucker & Reicks, 2002). This relationship with self-efficacy may partially explain why individuals who make healthier decisions in one domain may also be healthier in other domains. For instance, individuals who regularly exercise eat nearly a half serving more of fruit and a third additional serving of vegetables a day than individuals who do not exercise (Trudeau, Kristal, Li, & Patterson, 1998).

Environment.

Environment can influence competence indirectly by shaping efficacy beliefs and directly by creating opportunities for and challenges to making changes. Environmental factors are an often overlooked category of determinants that influence physical activity participation and healthy eating behavior (Glanz & Mullis, 1988). Aspects of the physical environment, such as the presence of sidewalks, enjoyable scenery, spaces for recreation, density of households, and walkability to businesses are positively associated with physical activity (Brownson, Baker, Housemann, Brennan, & Bacak, 2001; Carnegie et al., 2002; Li, Fisher, Brownson, & Bosworth, 2005). One study utilized a geo-coding approach to look at spatial access to formal (e.g. gyms/health clubs) and informal (e.g. parks, rivers) recreational facilities. The authors found that facilities were used more when they were located near the home and that informal facilities were used more than formal ones (Giles-Corti & Donovan, 2002). These findings suggests that living in a community with informal, convenient facilities may increase the likelihood that an individual will be physically active, whereas lacking these features may decrease the likelihood of physical activity. Similarly, having stores with healthy, affordable foods, and cafeterias and vending machines with healthy options increases the likelihood an individual will engage in healthy eating behaviors (Befort et al., 2006; French, Story, & Jeffery, 2001; Fries, Ripley, Figueiredo, & Thompson, 1999; Sorensen, Linnan, & Hunt, 2004; Sorensen et al., 1996; Swinburn et al., 1999; Zenk et al., 2005). Conversely, living in environments with high densities of fast food restaurants is associated with a decreased likelihood of healthy eating and an increased likelihood of obesity (Li, Harmer, Cardinal, Bosworth, & Johnson-Shelton, 2009).

The social environment, including perceptions of safety, enhanced by good street lighting and trust of neighbors and perceptions of social norms, also shapes behavior (Addy et al., 2004; King et al., 2005; Li et al., 2005). Perceiving neighbors as active and observing others in one's neighborhood being physically active were associated with greater personal levels of physical activity (Addy et al., 2004; King et al., 2000). Social norm impressions are likely to be more influential when people view others as similar to themselves. Viewing someone with similar health conditions as physically active is likely to be an effective motivator and may influence an individual's self-efficacy. Social norms also impact dietary behaviors (Kristal, Bowen, Curry, Shattuck, & Henry, 1990).

Relatedness

Relatedness refers to a sense of connection, trust, and support with others (Ryan et al., 2008). Feelings of relatedness are strongest when individuals feel understood and appreciated and perceive their communication with others as meaningful (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Social support encompasses these core elements of relatedness. Relatedness suggests that individuals will seek to strengthen these feelings of connection with others; healthy eating and physical activity may become more likely when feelings of relatedness are high or are perceived to be strengthened through these behaviors.

Social Support.

Social support includes encouragement from others, companionship, and role modeling of behaviors (Cutler, Flood, Hannan, & Neumark-Sztainer, 2011; Kelsey et al., 1996; Tessaro et al., 2006). Individuals with higher levels of social support are less likely to be sedentary than those with lower levels of support (Eyler et al., 1999; Giles-Corti &

Donovan, 2002) and influential others can serve as both barriers to or facilitators of dietary change (Devine, Connors, Bisogni, & Sobal, 1998; John & Ziebland, 2004; Shatenstein, Nadon, & Ferland, 2004; Tessaro et al., 2006). Social support may also relate to physical activity and engagement in healthy eating practices indirectly by enhancing self-efficacy (McAuley, Jerome, Marquez, Elavsky, & Blissmer, 2003). Social support may be particularly critical for individuals with chronic conditions who may require assistance with disease management in order to incorporate physical activity or healthy dietary practices into their lives. While social support is frequently considered in the context of family and friends, support from one's provider, particularly if the patient trusts and respects the provider, may be another large influence on patients' health behaviors.

Summary

In this chapter I provided definitions for older adults and lifestyle behaviors and presented some of the key diet and physical activity recommendations for older adults. I have demonstrated the importance of lifestyle behaviors and the need for behavior change among older adults in general, and particularly for older adults in Kentucky. I have discussed common measurement approaches and theories of health behavior, highlighting some of the key factors influencing health behavior choices. In this next chapter I describe older adults' health care use and clinical communication, highlighting the importance of communication and the challenges communication with older adults entails. I also explore the current state of research in regards to diet and physical activity counseling with older adults.

Chapter 3: Older Adults' Health Care Utilization and Clinical Health Communication

The goal of this chapter is to provide insight into older adults' health care utilization and experiences of clinical communication, focusing on opportunities for prevention counseling. I begin by presenting some research results regarding how frequently older adults visit healthcare providers – demonstrating the opportunities available for prevention counseling. I describe the inclusion of prevention counseling within older adults' healthcare visits and explore the relationship between health complexity and disease prevention, discussing how multiple morbidities can create or hinder prevention counseling. I highlight the importance of communication in the clinical setting, discuss communication challenges providers face with older adults, and provide evidence of limitations in current communication practices. Exploring one potential source of these limitations, I report on the limited training providers receive in geriatrics. This discussion involves recognition of the shortage of geriatricians, the limited geriatric training of non-geriatricians, the value of geriatric education that is not being realized, and barriers to geriatric training. In parallel to the limits in geriatric training, I also explore limits in providers' training regarding communication. I also describe the state of knowledge regarding communication and diet and physical activity counseling. Finally, I discuss strategies, approaches, and interventions to optimize communication and promote diet and physical activity.

Frequency of Older Adults' Healthcare Visits

Older Americans are the largest consumers of health care services, accounting for a disproportionately high percent (27%) of all physician office visits (National Center for Health Statistics, 2010). Most older adults have frequent interactions with health care

professionals to manage their various conditions (Cornoni-Huntley, Foley, & Guralnik, 1991; Fortin, Bravo, Hudon, Vanasse, & Lapointe, 2005), averaging 6.5 physician office visits per person per year for adults ages 65 to 74 and 7.7 visits per person per year for adults ages 75 and over (Committee on the Future Health Care Workforce for Older Americans & Institute of Medicine, 2008). In 2008, 44% of visits for adults ages 65 and over were to primary care providers (The American Geriatrics Society, 2012). While fewer than 8% of these visits are dedicated preventive care visits, this frequent contact creates an opportunity for physician lifestyle counseling (Committee on the Future Health Care Workforce for Older Americans & Institute of Medicine, 2008).

To better understand this potential opportunity for lifestyle counseling, it is important to understand the social context of these visits. Over a third of older adults report that they are typically accompanied to their doctor's visits by a family member or a friend (Wolff & Roter, 2008). One study comparing two person (patient and provider) and three person (patient, provider, and companion) medical visits found that the presence of a third person, regardless of how minor their involvement during the visit, can influence the process and content of the medical encounter (Greene, Majerovitz, Adelman, & Rizzo, 1994). This potential influence of a third person helps to explain why studies frequently use audiotapes of patient-physician encounters rather than having a direct observer present (Coupland, Robinson, & Coupland, 1994; Roter, 1991). The presence of a companion may facilitate communication (Prohaska & Glasser, 1996); patients who are accompanied to their visit are often more satisfied with their provider's communication than those who are not accompanied (Wolff & Roter, 2008). However, the presence of a companion can also create challenges; a companion's presence may

create uncertainties about the abilities and responsibilities of each individual and can lead to inadvertent marginalization of the patient and can support patient dependency (Hasselkus, 1994).

Inclusion of Prevention Counseling in the Clinical Visit

The improved long-term prognosis for living with chronic conditions increases the value of preventing, delaying, or controlling the development of new conditions for maximizing health and quality of life (Crabtree et al., 2005; Goldberg & Chavin, 1997). Despite mixed evidence regarding the effectiveness of physician lifestyle counseling (Eden, Orleans, Mulrow, Pender, & Teutsch, 2002; U.S. Preventive Services Task Force, 2003), the U.S. Preventive Services Task Force has recommended that preventive services be included during every medical visit and suggests behavioral counseling is particularly appropriate for individuals with known risk factors or heightened risk for chronic disease.

The American College of Preventive Medicine also acknowledges varying research results to date, but the organization believes that the obesity epidemic and the known health benefits of regular physical activity speak to the importance of developing recommendations for including physical activity counseling in the primary care setting (Jacobson, Strohecker, Compton, & Katz, 2005). The same rationale could easily be applied to the importance of dietary counseling. While changing lifestyle behaviors is challenging, complex, and often viewed by providers as futile (Orleans, George, Houtt, & Brodie, 1985; Sherman & Hershman, 1993; Walsh, Swangard, Davis, & McPhee, 1999), prior research indicates that provider counseling has the potential to help patients with dietary and physical activity changes (Burton, Shapiro, & German, 1999; Rippe,

McInnis, & Melanson, 2001; Sciamanna, Tate, Lang, & Wing, 2000; Tyler et al., 2008). Unfortunately, counseling for certain prevention behaviors, including diet and physical activity, falls well below recommended levels (American Academy of Family Physicians, 2011; Kolasa & Rickett, 2010; Rex, Johnson, Lieberman, Burt, & Sonnenberg, 2000). McAlpine and Wilson (2007) suggest that the likelihood of obesity-related counseling may actually be declining in recent years, despite rising incidence of obesity, overweight, and sedentary behavior. One potential explanation for this decline is that current reimbursement methods value efficiency, resulting in more task-oriented healthcare delivery (Bensing et al., 2006). Hopefully, some of these trends will reverse with the recent passing of The Patient Protection and Affordable Care Act (PPACA), signed into law in March 2010. The PPACA provides for coverage of obesity, physical activity, and dietary counseling (Bleyer, 2010). The PPACA supports this counseling not just in the context of disease management, but also for prevention purposes (Koh & Sebelius, 2010). For older adults, Medicare will now reimburse providers for an annual wellness visit including discussion of patient prevention plans (DeVille & Novick, 2011; Tuma, 2012).

Low rates of preventive counseling represent a missed opportunity for health promotion, especially because most adults report that their physician is their most trusted and influential source of health information (Krewski et al., 2006). Evidence also exists for a physician priming effect; physician advice about health behaviors is associated with increased perceptions that printed materials are personally relevant, leading to greater likelihood of lifestyle changes (Galuska et al., 1999; Kreuter et al., 2000).

There is a range of factors that contribute to the low rates of preventive counseling. One notable influence is that the United States healthcare system is treatment

oriented. Resources go disproportionately to medical care rather than prevention or health promotion, despite research demonstrating that a large portion of deaths are caused by modifiable factors and behavioral choices (McGinnis et al., 2002). Interest groups that influence funding are often condition-specific and treatment-oriented, leading to less support for health promotion efforts with more diffuse benefits (McGinnis et al., 2002). For instance, cancer advocacy groups may focus on treatment or screening for particular forms of cancer, rather than stressing the benefits of diet and physical activity for reducing the risk of developing cancer (Markman, 2008). McGinnis and colleagues (2002) discuss the double standard, whereby prevention efforts need to be shown to be cost effective to be supported, whereas medical care merely needs to be shown to be safe and effective. Demonstrating cost-effectiveness of prevention is particularly challenging for lifestyle behaviors, such as diet and physical activity, given that cost savings are often distant and therefore less visible (McGinnis et al., 2002). These various factors contribute to a disproportionate share of healthcare resources invested in costly treatments and significant missed opportunities to enhance quality of life through preventive care. These same challenges exist at the individual level; from an epidemiological perspective the value of prevention is clear; however, conveying the value of prevention to individuals can be more challenging since the benefits are often distant and may involve decreasing the likelihood of experiencing negative events rather than treating and improving current conditions (Ritchie, 1994).

Health Complexity and Disease Prevention

Given the high prevalence of multiple chronic conditions, or multiple-morbidity (MM), it is important to consider how prevention counseling relates to MM. The

relationship between MM and prevention counseling is particularly important because MM puts individuals at increased risk of inpatient admissions, hospitalizations with preventable complications, and greater costs (Wolff, Starfield, & Anderson, 2002). The presence of MM can either decrease or increase the likelihood of prevention discussion (Bardach & Schoenberg, 2012). Greater disease complexity within the context of visit time constraints may limit opportunities for prevention-related recommendations (Meriwether, Lee, Lafleur, & Wiseman, 2008; Yarnall, Pollak, Ostbye, Krause, & Michener, 2003). Conversely, greater disease complexity may result in more visits and thus more opportunity for counseling. I will discuss both of these possibilities in greater depth.

MM Limits Prevention Counseling

The demands of MM management may overshadow prevention activities, decreasing the likelihood that prevention will be addressed (Crabtree et al., 2005; Summerskill & Pope, 2002). Treatment, monitoring, and counseling demands of multiple conditions may exceed the available visit time, leaving little time for discussion of disease prevention (Piette & Kerr, 2006; Yarnall, Pollak, Ostbye, Krause, & Michener, 2003). Stange, Woolf, and Gjeltema (2002) indicate that patients coming in for “well care” receive, on average, 1.4 minutes dedicated to health promotion, but those coming in for chronic conditions spend, on average, only 0.8 minutes.

Most research suggests inverse relationships between MM and health care providers’ advocacy for and patients’ receipt of preventive services. One study of patients with diabetes found that patients with greater levels of co-morbidity received fewer blood glucose tests (Halanych et al., 2007). The authors suggest one source of this

lesser testing may be a lack of evidence-based medicine for patients with MM, leading to less certainty in the benefit of certain preventive measures among patients with MM (Halanych et al., 2007). Another study suggested that for each unit of increase in a comorbidity index, there was a 17% decrease in the likelihood of mammography, a 13% decrease in clinical breast exams, and a 20% decrease in Pap smears (Kiefe, Funkhouser, Fouad, & May, 1998). This inverse relationship between MM and receipt of prevention services is consistent with Schoen, Marcus, and Braham's (1994) finding that with increasing MM, physicians are less likely to request mammograms and women are less likely to receive breast and cervical screening. As MM increases, clinicians may be uncertain regarding the value of screening (Kiefe et al., 1998).

MM Enables Prevention Counseling

Despite the many challenges MM can create for prevention, some researchers have suggested that since individuals with MM are more involved with the healthcare system, they have more opportunity for engagement in disease prevention activities. For example, patients 65 years of age and older with fewer than six conditions have an average of 2.1 primary care visits and 1.8 specialist visits a year, while patients with six to nine conditions have 3.9 primary care and 4.3 specialist visits a year (Starfield, Lemke, Herbert, Pavlovich, & Anderson, 2005). Those making more frequent visits might reap the benefits of additional opportunities for prevention counseling (Stange, Flocke, & Goodwin, 1998).

Similarly, research shows that diabetics with five or more chronic conditions are 67% more likely to receive a hemoglobin A1C test and 50% more likely to receive eye exams compared with diabetic patients with no additional chronic conditions; these

higher rates of preventive care are related to the greater number of office visits (Bae & Rosenthal, 2008). Fleming and colleagues (2005) proposed a “surveillance hypothesis,” suggesting that the observed relationship between conditions, such as cardiovascular disease, and a decreased odds of late stage breast cancer, can be attributed to increased screening and early detection. In a more recent study, Fleming and colleagues (2011) observed a dose-response relationship between number of morbidities and likelihood of colorectal cancer screening; the more morbidities a patient reported, the greater the likelihood of adherence to colorectal cancer screening. Min and colleagues (2007) found that greater numbers of chronic conditions were associated with higher quality of care, speculating that physicians provide more rigorous attention to their more complex patients. While Min et al. examined quality of care indicators, rather than prevention specifically, their findings support the possibility that MM may actually facilitate disease prevention activities.

While the relationship between these various clinical preventive services and MM has been explored, the relationship between MM and the likelihood of diet and physical activity counseling has not specifically been examined. MM could reduce the likelihood of diet and physical activity discussion due to a focus on existing conditions and a desire not to overwhelm patients; conversely, MM could facilitate discussion of diet and physical activity if these behaviors are linked to disease management or are viewed as a way to prevent complications or additional conditions that would further tax patients who already have significant disease management responsibilities (Bardach & Schoenberg, 2012).

The Importance of Communication in the Clinical Setting

Older adults average over six physician visits per year, suggesting providers have frequent and repeated opportunities to influence older adults' health (Committee on the Future Health Care Workforce for Older Americans & Institute of Medicine, 2008). Communication between patients and their providers is a key element to maximize these opportunities to promote patient health (Bodenheimer, Lorig, Holman, & Grumbach, 2002; Ryan & Butler, 1996). Communication requires both listening and speaking skills (Weitzman & Weitzman, 2003); in the clinical context the goals of communication include to strengthen the patient-provider relationship, elicit patient information, convey information clearly, and develop plans (Makoul, 2001). Since most older adults have multiple chronic conditions (Agency for Healthcare Research and Quality, 2008), the care of older adults requires ongoing communication, collaboration, and education - not just quick fixes for acute concerns (Funnell & Anderson, 2000; Holman & Lorig, 2000).

Highlighting the importance of communication skills, Chang and colleagues (2006) investigated the relationship between patients' (ages 65 and older) global ratings of care and providers' communication and technical quality of care. Communication was assessed using four Likert-scale questions from the Consumer Assessment of Healthcare Providers and Systems survey. These questions asked about over the last 12 months how often providers listened carefully, explained things in a way the patient could understand, showed respect for what the patient had to say, and spent enough time with the patient. These four items were combined into a quality of communication score. Technical quality of care was measured based on a set of over 200 quality indicators for 22 clinical conditions, defined by the Assessing Care of Vulnerable Elders project; data for the

quality indicators were obtained from chart abstraction and patient interviews. Chang and colleagues (2006) found that better communication, but not technical quality of care, was associated with higher global ratings of health care. Chang's findings suggest that strong communication skills are critical to older patients' satisfaction with their care.

Communication satisfaction has also been linked to improved treatment adherence, greater recall and understanding of medical information, greater ability to cope with disease, enhanced quality of life, reduced hospitalizations, and improved patient physical and psychological health outcomes (Kaplan, Greenfield, & Ware, 1989; Ong, de Haes, Hoos, & Lammes, 1995; Stewart, 1995; Stewart, Meredith, Brown, & Galajda, 2000). Specific features of the communication, not just overall satisfaction, are also linked to outcomes. For instance, when providers deliver more information, ask more adherence-related questions (in the context of fewer total questions), and speak more positively, adherence is greater (Hall, Roter, & Katz, 1988). Similarly, when patients are able to share their whole story and the provider shares more information with the patient, blood pressure control is improved (Orth, Stiles, Scherwitz, Hennrikus, & Vallbona, 1987). Over time, greater levels of psychosocial counseling also improve patients' emotional health (Roter et al., 1995). Provider sensitivity to nonverbal cues is associated with an increased likelihood of patients showing up for their appointments (DiMatteo, Hays, & Prince, 1986). Strong communication skills also decrease the likelihood of malpractice (Beckman, Markakis, Suchman, & Frankel, 1994).

Challenges and Limits in Communicating with Older Adults

Communication is a complex and imperfect process regardless of age. The challenges of communication can be exacerbated by age due to increased heterogeneity in

old age and age associated physiological changes. With age and increasing life experience, inequality and variability increase, resulting in a wide diversity of beliefs about health, disease, and preferences for care – which providers have to navigate (Klap, Unroe, & Unutzer, 2003). Navigating these beliefs and preferences is an imperfect process; physicians tend to underestimate their older patients' desire for aggressive care (Hamel et al., 2000), engage in less joint-decision making, and exhibit less optimism and less goal concordance with their older patients than their younger patients (Adelman, Greene, & Ory, 2000; Greene, Adelman, Charon, & Friedmann, 1989). These communication challenges may be heightened by intergenerational gaps between providers and patients (Jackson, Davis, Murphy, Bairnsfather, & George, 1994). Further, as individuals age the likelihood of sensory and cognitive deficits increases; these changes can create difficulties with perception, comprehension, and memory of information (Adelman et al., 2000; Kessels, 2003).

Given these various challenges, communication between older patients and providers exhibits a number of shortcomings; older patients themselves are often cognizant of these communication limitations. Roughly half of patient complaints and concerns are not discussed with physicians (Stewart, McWhinney, & Buck, 1979), perhaps due to a tendency for physicians to interrupt patients when describing problems (Beckman & Frankel, 1984). In 1984, Beckman and Frankel found that physicians interrupted their patients on average only 18 seconds after the patients begin discussing their reasons for their visit – and that these interrupted statements were almost never completed. In 1999, Marvel and colleagues found little change – with physicians interrupting patients after only 23 seconds (Marvel, Epstein, Flowers, & Beckman, 1999).

Perhaps as a result of these interruptions, disagreement between patients and providers regarding the main presenting problem are common (Starfield et al., 1979; Starfield et al., 1981). Patients often leave visits with incomplete or inaccurate understanding of what was just discussed, sometimes due to overly technical or medical terminology/jargon or different interpretations of more common language (Ali, Khan, Akunjee, & Ahfat, 2006; Hume, Kennedy, & Asbury, 1994). Older adults within three days of discharge from the emergency department indicate significant comprehension limitations: they report not understanding self-care instructions (16%), discharge information about diagnosis (21%), return precautions (56%), and expected course of illness (63%) (Hastings et al., 2011). Among older adults, the majority identify at least one communication problem with their providers (Hickman et al., 2009). Patients attribute these communication problems to comprehension of spoken information, hearing and seeing information, and remembering information.

Poor patient health literacy may be one contributor to comprehension difficulties (Roter, 2011). Health literacy refers to difficulty obtaining, processing, and understanding health-related information (Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs & American Medical Association, 1999). Williams, Davis, Parker, and Weiss (2002) conducted a literature review from 1966 to 2001 focused on health literacy and patient-physician communication and found that over a third of patients ages 65 and older have inadequate or marginal health literacy. Physicians often overestimate patient comprehension (Calkins et al., 1997), and frequently fail to assess patient comprehension (Schillinger et al., 2003). Older adults in general may have

difficulty remembering recommendations from clinical visits, but those with low health literacy are particularly likely to have trouble with recall (McCarthy et al., 2012).

Failing to assess patient recall and comprehension has important implications since patients with poor health literacy report worse health status, poorer understanding about medical conditions and treatment, and lower rates of engagement in various preventive services (including influenza vaccination, pneumococcal vaccination, mammogram, and pap smears) even after adjusting for education, income, and health status (Scott, Gazmararian, Williams, & Baker, 2002). The failure to take the extra time to assess understanding and explain conditions and recommendations reduces patient comprehension and can also result in higher rates of hospitalizations (Baker, Parker, Williams, & Clark, 1998). Assessing patient comprehension of health recommendations may be particularly important because the majority of patients with comprehension difficulties are not aware of what they do not understand; providers therefore cannot rely on patients to identify their own educational needs (Engel et al., 2009). Even when patients are aware of their comprehension difficulties, physicians believe that patients are often hesitant to ask questions about what they do not understand, particularly in regard to their health conditions or treatment plan (Arnold, Coran, & Hagen, 2012).

Communication with older adults may also be challenging due to the complexity of many older patients' health needs. Throughout the world, chronic conditions increasingly comprise the most burdensome health challenges, accounting for 60% of all deaths, particularly among middle aged and older adults (World Health Organization, 2010). With many maladies specific to or more common in old age (Durso, 2006), the majority of older adults have at least two chronic conditions (Agency for Healthcare

Research and Quality, 2008; Wolff et al., 2002), with one third of adults experiencing three or more chronic conditions in later life (Anderson & Horvath, 2002; Statistics Canada, 2010). With increasing MM, vulnerability to adverse events is heightened and the management and treatment of existing conditions are complicated (Adams et al., 2002; Durso, 2006; Gurwitz et al., 2003). Providers must also distinguish between normal age-related changes and treatable conditions (Bethea & Balazs, 1997). With multiple morbidity as the norm rather than the exception (Agency for Healthcare Research and Quality, 2008), providers have to balance treatment for various conditions and preventive care activities (Bardach & Schoenberg, 2012). Primary care providers may also have to keep track of recommendations from a number of specialists and coordinate transitions in care (Kwak & Haley, 2005). The healthcare required for an older adult may be more demanding – and therefore the communication needs of this care are likely to be more complex as well.

The health complexity of older adults may also lead to additional challenges for providers due to visit time constraints. Time constraints can serve as a barrier to communication at any age, but are particularly problematic for older adults, who often have multiple health conditions, and thus will likely have more complicated and extensive visit needs (Durso, 2006). Physician visits are roughly 16 minutes long (Blumenthal et al., 1999), which can make it difficult for physicians to address everything they want to cover during a visit (Petrella & Wight, 2000; Yarnall et al., 2003). Prevention services may be particularly likely to be overlooked, since to fully satisfy the United States Preventive Services Task Force (USPSTF) recommendations, 7.4 hours of a physician's time would be required per day (Yarnall et al., 2003). Trying to squeeze so

much content into such a short visit may lead to the omission of some items and to less extensive discussion about other items, including less time explaining health conditions and management strategies and less attention to verifying patient comprehension. These visit time pressures may result in superficial discussions of prevention, which may explain why advice of a shorter duration is not remembered as well by patients as advice of longer duration (Flocke & Stange, 2004). Physicians also tend to overestimate (by nearly threefold) the amount of information they can effectively convey during a 15 minute discharge interaction, suggesting they respond to time pressures by trying to cover more material than the patient can comprehend (Ackermann et al., 2012). The negative influence of visit time constraints on communication effectiveness is exacerbated by reimbursement procedures that reward medical procedures over counseling and patient discussion (Douglas, Torrance, van Teijlingen, Meloni, & Kerr, 2006; Eakin, Smith, & Bauman, 2005; Meriwether, Lee, Lafleur, & Wiseman, 2008; Mirand, Beehler, Kuo, & Mahoney, 2003; Petrella & Lattanzio, 2002). Given these various challenges to communicating with older adults, it is helpful to consider the training providers receive to care for older patients.

Limited Provider Training in Geriatrics

Shortage of Geriatricians

Despite these challenges to providing care for and communicating with older adults, there are only 1.1 geriatricians for every 10,000 adults ages 65 and older, with this ratio expected to *decrease* in the future (Administration on Aging, 2010; Peterson, Bazemore, Bragg, Xierali, & Warshaw, 2011). In contrast, there are 7.4 physicians focused on providing care to children for every 10,000 children under the age of 18

(Shipman, Lan, Chang, & Goodman, 2011). Geriatricians are trained to provide care for older adults – care which may sometimes challenge medicine’s traditional focus on acute conditions and cure and instead focus on chronic disease management, and maintaining or improving functional ability and quality of life (Apesoa-Varano, Barker, & Hinton, 2011; Cooper, 1990; Gambert, 2009).

Limited Geriatric Training Among Non-Geriatricians

Given the low ratio of geriatricians to older adults, the majority of physicians seeing older patients are not geriatricians (Alliance for Aging Research, 2002), highlighting the importance of all providers developing expertise in providing care to older adults. I focus this discussion of training specifically on the training of *physicians* since physicians are the most likely provider type an older patient with complex care needs will see (Druss, Marcus, Olfson, Tanielian, & Pincus, 2003). Many of the findings I discuss regarding the shortage of individuals with specific geriatric expertise and the limits in geriatric training received exist across provider specialties (Bardach & Rowles, 2012). Despite recognition of the importance of geriatric training, geriatric education is limited.

The American Association of Medical Colleges seems to have acknowledged the value of geriatric education; this value is reflected in the creation of minimum competencies in geriatrics for medical students (Portal of Geriatric Online Education, 2010). The competencies include recognition of the challenges involved in treating older adults regarding medication management, cognitive and behavioral disorders, self-care capacities, falls and balance disorders, healthcare planning and promotion, atypical presentations of disease, palliative care, and hospital care (Portal of Geriatric Online

Education, 2010). Individual medical schools determine how these competencies are developed and evaluated (Kuehn, 2009). As a result of the lack of a standardized approach, there is often ambiguity regarding the extent to which competencies are addressed. Comprehensive care for older patients typically requires a team of providers, yet interprofessional expertise is surprisingly missing from this list of geriatric competencies.

Addressing these geriatric competencies may be challenging given the limited geriatric education aspiring physicians receive. Despite the recognized need for providers to develop expertise in geriatrics, the median time devoted to geriatric education in medical school in 2005 was only 9.5 hours (Eleazer, Doshi, Wieland, Boland, & Hirth, 2005). Considered in context, most medical schools devote between 20 to 40 hours to training in genetics (Thurston, Wales, Bell, Torbeck, & Brokaw, 2007). A survey of U.S. medical schools revealed that less than half (41%) of responding schools have a structured geriatrics curriculum and less than a quarter (23%) require a geriatric clerkship (Geriatrics Workforce Policy Studies Center, 2008). While all medical schools require pediatrics rotations, the same is not true with respect to geriatrics rotations (Kovner, Mezey, & Harrington, 2002). Not surprisingly given this limited coverage, many medical students report receiving inadequate geriatrics coverage in medical school (Association of American Medical Colleges, 2010).

Provider training at the graduate level is also limited. Family practice and internal medicine residency programs have limited geriatrics requirements, but training physicians in other areas who may be equally likely to serve large numbers of older patients do not have any specified geriatric training (Kovner, Mezey, & Harrington,

2002). Individual residency review committees develop training standards for each specialty; a 2003 review of the 91 residency reviewed committee-accredited non-pediatric specialties found that only 27 have specific geriatric training requirements and that these requirements tended to be modest (Bragg & Warshaw, 2005).

Value of Geriatric Education

The limits in geriatric education just discussed are disconcerting, particularly given evidence that having geriatric competency improves patient outcomes (Cohen et al., 2002; Kovner, et al., 2002). Cohen and colleagues (2002) found that inpatient and outpatient geriatric units led to better patient outcomes than non-geriatric units. Similarly, Kovner and colleagues (2002) reported that when nurses had geriatric training, their patients had fewer hospital readmissions and fewer inappropriate transfers from nursing facilities to the hospital than when nurses lacked this training. In addition to the direct benefits to patients of improved geriatric training, there is also the potential for significant cost savings with competent geriatric care (Miura, DiPiero, & Homer, 2009; Tucker et al., 2006).

Researchers have demonstrated that relatively minor infusion of geriatric content can have significant impacts (Intrieri, Kelly, Brown, & Castilla, 1993; Robins & Wolf, 1989). Robins and Wolf (1989) found that when students participated in an experiential educational program where they interacted directly with nursing home residents, they improved their empathetic and patient-centered communication abilities with older adults. Intrieri and colleagues (1993) suggested that four 90 minute group geriatric and gerontology sessions among third-year medical students improved participants' communication skills with older adults. Other individuals have proposed communication

skills training for already practicing providers, and have demonstrated both short (Joos, Hickam, Gordon, & Baker, 1996) and long-term success for this approach (Fallowfield, Jenkins, Farewell, & Solis-Tapala, 2003). Researchers have also reported that brief educational sessions focused on elderspeak (a manner of speaking to older individuals similar to baby-talk in that it is marked by features such as exaggerated intonation, simple words, slow speech, and diminutives) can be effective (Hummert & Ryan, 1996; Kristine Williams, Kemper, & Hummert, 2003). Regardless of when in a provider's training the geriatric education takes place, additional geriatric expertise and sensitivity to aging-related issues is likely to enhance communication effectiveness with and care provision for older adults.

Barriers to Training

There are a variety of factors that contribute to providers' limited geriatric training. Many programs cite crammed curricula as a challenge when faced with the prospect of adding additional material (Saunders, Yellowitz, Dolan, & Smith, 1998). Other challenges include few faculty members with geriatric expertise and significant competing clinical practice obligations among these faculty, leaving limited time for student education (Warshaw, Bragg, Shaul, & Lindsell, 2002). While a program is more likely to offer geriatric-focused courses if geriatrics is a primary interest for one of the faculty members (Pratt, Simonson, & Boehne, 1987), opportunities for developing geriatric expertise are limited by few resources to support training, low reimbursement rates for geriatric care, and the false belief that caring for older adults does not require distinctive geriatric skills (LaMascus, Bernard, Barry, Salerno, & Weiss, 2005; Rubin, Stieglitz, Vicioso, & Kirk, 2003).

Communication and Prevention Counseling

Limited Provider Training in Communication

Traditionally, medical school curriculum focused on helping students develop mastery of the basic sciences such as anatomy, physiology, biochemistry, molecular biology, pharmacology, microbiology, and pathology. More recently, medical organizations have been acknowledging the importance of communication skills and supporting schools' efforts to incorporate increased didactic coursework focused on clinical communication skills (Association of American Medical Colleges, 1999; Lipkin, Putnam, & Lazare, 1995; Simpson et al., 1991). The extent of communication skills training varies widely among schools, ranging from four to over 40 hours of instruction (Association of American Medical Colleges, 1999). Communication skills are frequently taught through role-playing and with simulated patients; evaluation typically involves some level of observation and feedback of students interviewing patients (Novack, Volk, Drossman, & Lipkin, 1993). Based on a 1991 survey, roughly half of medical schools' interviewing courses are part of courses on physical diagnosis (Novack et al., 1993). A review of the literature suggests that when physicians receive communication training the odds of patient adherence are 1.62 times higher than when physicians do not participate in any communication skills training (Zolnierrek & Dimatteo, 2009). While the recognition that how doctors communicate may be as important as what doctors know was a significant advancement in quality of care, scientific understanding of optimal communication is still a work in progress.

Limits in communication training may be particularly challenging for the care of older adults. Sparse geriatric coverage may lead to poorer knowledge and attitudes

regarding older adults and consequently contribute to challenges communicating with older adults, creating further challenges to providing optimal care (Cozort, 2008; Flood & Clark, 2009; Funderburk, Damron-Rodriguez, Storms, & Solomon, 2006; Intrieri et al., 1993). In addition, both conscious and unconscious ageism, as well as intergenerational differences, may further weaken the strength of the providers' communication approach (Adelman et al., 2000; Bethea & Balazs, 1997). Provider stereotyping of older adults is sometimes apparent through elder-speak, patronizing over accommodating speech (Kemper, 1994; Ryan, Hummert, & Boich, 1995; Williams, Kemper, & Hummert, 2004).

Current State of Knowledge of Communication and Diet and Physical Activity

Counseling

Research exploring communication and prevention counseling has addressed the frequency of recommendations for diet and physical activity as well as patient and provider-related factors associated with the likelihood of providing a lifestyle change recommendation (Anis et al., 2004; Galuska, Serdula, Brown, & Kruger, 2002; VanWormer, Pronk, & Kroeninger, 2009). The nature and influence, or lack thereof, of these discussions has been explored only to a limited extent. Researchers have explored the context of prevention recommendations (e.g., as part of a structured routing or in response to a trigger) and whether problem solving and specific action plans are incorporated, but the various components of the recommendation have not been examined holistically nor have they been examined specifically with older adults (Cooper, Goodwin, & Stange, 2001; Flocke, Kelly, & Highland, 2009; Flocke & Stange, 2004; Glasgow, Eakin, Fisher, Bacak, & Brownson, 2001). Further, while research has compared patient and provider recollections of prevention recommendations, patient

perceptions of the influence of these recommendations have not been examined (Sciamanna, Goldstein, Marcus, Lawrence, & Pinto, 2004). While knowing the nature and content of recommendations is important foundational knowledge, patient recall for and perceptions of this advice is critical for understanding how recommendations may ultimately facilitate behavior change.

Frequency of Diet and Physical Activity Counseling

Various researchers have explored the extent to which lifestyle recommendations occur, though most researchers have not looked specifically at older adults. While the estimates vary, with the majority of older adults being overweight (Ogden et al., 2006), it seems that the potential of lifestyle change counseling is unrealized. VanWormer, Pronk, and Kroeninger (2009) reviewed 12 articles and concluded that there is little evidence for change in the rates of physical activity counseling over the past few decades. They note, however, that comparison is limited by variable definitions of counseling, ranging from simple advice to detailed prescriptions.

Most sources suggest that fewer than 25% of visits include diet or physical activity advice. Data from the National Health Interview Survey suggest that less than a quarter of adults who have seen a doctor in the past year report receipt of diet or physical activity advice (Honda, 2004). In the primary care setting, Flocke and Stange (2004) observed 2,670 outpatient family physician visits (with an average patient age of 52 years) and found that exercise was discussed in 23% of visits and diet in 21% of visits. Anis and colleagues (2004) also utilized direct observation to examine physician counseling regarding diet and exercise. They trained medical students to observe primary care visits and record characteristics of the patient and whether diet and exercise were

discussed, and if so, who initiated the discussion. Using this method, they observed a total of 4,344 patient visits from a total of 38 different primary care offices in Kansas, mostly in non-metropolitan areas. They found counseling rates for diet and exercise varied from 0-55% across offices, and that physicians counseled patients on dietary habits in 25% of visits and exercise in 20% of visits.

Focusing specifically on older adults, Damush and colleagues (1999) conducted telephone interviews with 893 Medicare recipients. In their research the prevalence of ever receiving a physician suggestion to exercise was 48%; when limited to within the last year, this percentage dropped to 24%, consistent with the estimates from other researchers. Galuska and colleagues (2002) used National Health Interview Survey data and found that approximately half of older adults who attended a routine check-up during the previous year reported being asked about physical activity by their health-care providers. I was unable to find any research that explored the frequency of discussions pertaining to diet specifically among older adults.

Recall of Diet and Physical Activity Counseling

Flocke and Stange (2004) suggest patients correctly recalled that discussions of exercise and diet occurred only 43% and 44% of the time, respectively. Patients were more likely to recall the advice when it lasted longer and when it occurred during a well-care visit, though presence of a health behavior relevant diagnosis during an illness visit increased recall. An additional minute discussing the target behavior was associated with 2.5 times the likelihood of the advice being recalled. In contrast, Sciamanna and colleagues (2004) reported better recall for physical activity discussions. Sciamanna and colleagues (2004) conducted a study focusing on the actual content of physical activity

recommendations. They compared patient and provider perceptions of physical activity counseling with audiotapes. They found good concordance in general, with discrepancies generally due to patient over-reporting of counseling.

Factors Associated with Discussion of Diet and Physical Activity Counseling

Researchers have observed associations between a range of factors and the likelihood of discussion of diet and physical activity. Most of this research has focused on patient-based factors. Anis and colleagues (2004) found that lifestyle counseling occurred more frequently among new patients than among established ones (30% more for diet and 50% more for exercise). Receipt of dietary counseling was more common among older patients; receipt of exercise counseling did not seem to be associated with patient age. Damush and colleagues (1999) suggested that the likelihood of ever having received a physician recommendation to exercise was more common among individuals who were younger, more sedentary, and who had higher body mass indexes. Galuska and colleagues (2002) indicated that discussion of physical activity was more likely to be reported by men, those under age 80, obese individuals, more educated individuals, and among those already meeting recommended levels of physical activity.

Researchers have also examined the relationship between the likelihood of diet and physical activity counseling and physician characteristics and office environments. Frank and colleagues (2002) examined nutrition counseling among female physicians and found a number of characteristics associated with a greater likelihood of nutrition counseling, including being a primary care provider, being a vegetarian, having greater counseling confidence and having more extensive counseling training. Researchers have also found that providers who exercise themselves are more likely to engage in exercise

counseling with their patients (Abramson, Stein, Schaubele, Frates, & Rogan, 2000; Frank, Bhat Schelbert, & Elon, 2003). Anis and colleagues (2004) found that counseling was not associated with physicians' age, years in practice, or number of patients per week. Anis and colleagues (2004) did find, however, that counseling was more frequent in offices with diet or exercise brochures.

Nature of Diet and Physical Activity Counseling

Researchers have examined a number of different features of diet and physical activity discussions. These features include the duration of the discussion, the context of the discussion, who initiates the discussion, and the content of the discussion. This research that explores the specifics of the discussion, and not just whether or not the discussion occurs, is much less common.

The average duration of discussions pertaining to diet and physical activity is relatively short. Stange et al. (2002) found that the average duration of health promotion discussions was 1.35 minutes, reduced to only .7 minutes when also taking into account visits during which prevention counseling did not occur. They indicate that researchers who suggest "brief" counseling sessions of three to five minutes could be proposing as much as half of a visit and instead suggest a more realistic goal of one minute per visit, with information technology and community supports. Focusing just on dietary counseling, Eaton, Goodwin, and Stange (2002) found that the average duration of dietary counseling was 55 seconds, ranging from less than 20 seconds to over six minutes.

Context - the discussion or coverage immediately preceding initiation of a topic - has been explored in terms of whether or not prevention discussion occurs in relation to

illness care. Cooper, Goodwin, and Stange (2001) found that preventive service delivery was often associated with related signs or symptoms, suggesting illness care may present an opportunity for prevention. They found exercise counseling was delivered in 16.8% of eligible visits, 38.6% of the time due to symptoms. Dietary counseling was broken into cholesterol/fat, caloric balance, calcium, and nutrient intake, with rates of counseling among eligible patients ranging from 4.4% to 17.8%, and relationship to symptoms ranging from 14.6% to 56.4% of this counseling. Flocke, Kelly, and Highland (2009) evaluated audio-recordings of 189 visits to five family practice physicians who were selected for their high rates of prevention provision. The patient population was all adults, mostly between ages 26 and 60. They found that most prevention discussions occurred in the context of structured routines (e.g., checklists) or opportunistic triggers (symptoms or conditions).

Initiation of discussion, or who brings up the topic, has also been explored in relation to lifestyle counseling. Anis and colleagues (2004) found that lifestyle counseling was typically (61% of the time) physician-initiated. Flocke, Kelly, and Highland (2009) suggested that who initiated the topic also related to the content of the discussion; they found that physicians were more likely to provide advice or assistance when the patient initiated the topic and indicated a readiness to act or expressed worry. Patients' initiation of topics involved reporting current efforts, asking for information or help, or linking the behavior to a problem being discussed.

Surprisingly little research has examined the actual content of lifestyle counseling. Sciamanna and colleagues (2004) conducted a study where all participating physicians were instructed to counsel their patients on physical activity, but the content of

that counseling was left up to them. The most common areas physicians counseled on were type of activity recommended, reasons to become active, and discussion of past experiences with activity (83.7%). Action items - such as written plans or making plans for future discussion - were very uncommon.

Influence of Diet and Physical Activity Counseling

Researchers have suggested that physician recommendations are influential. Grady and colleagues (1992) found that those who reported having received physician encouragement for mammography were nearly four times more likely to have ever had screening mammography than those who did not report receipt of physician encouragement. Galuska and colleagues (2002) found an association between a provider asking about physical activity and the individual obtaining recommended amounts of physical activity. For those individuals whose provider asked about physical activity, 38% of those ages 50-64, 34% of those 65-79 and 28% of those 80 and over, respectively, engaged in recommended amounts of physical activity. In contrast, for those who were not asked by their providers about physical activity, the percent of individuals achieving recommended amounts of physical activity were 27% for ages 50-64, 23% for ages 65-79, and 11% of those 80 and over (Galuska et al., 2002). However, it is unclear from this study whether the provider discussing physical activity directly promoted engagement in physical activity, or if providers selectively discussed physical activity with healthier adults who are more likely to be physically active. Greenlund and colleagues (2002) similarly explored the likelihood of patients making changes in diet or physical activity in relation to receiving physician advice to make such changes. They examined patients with a history of stroke and found that 85% of patients who had

received dietary advice reported a dietary change, compared with 56% of those who did not receive dietary advice, and 77% of patients who had received exercise advice reported exercising more, in comparison to 39% who did not receive exercise-related advice. Post and colleagues (2011) discovered that overweight patients were more likely to report attempting to lose weight in the past year if they were told by their provider that they were overweight.

Recently, researchers have begun to explore the relationship between the content of a recommendation and the influence on patient outcomes. Jay and colleagues (2010) explored use of the 5As – assess, advise, agree, assist, and arrange – in the context of weight loss recommendations and related these items to motivation and intention to change. They found that greater use of the 5As was associated with greater motivations and intentions for healthy eating and exercise (Jay et al., 2010). While their research provides valuable information regarding the specific elements of counseling, their research was based solely on patient self-report of whether or not certain elements were included and did not explore how these elements were conveyed or perceived (Jay et al., 2010). Without including patient perceptions, it is unclear whether the nature of the recommendations actually influenced patients or whether providers simply counseled more intensely with more motivated patients. Further, prior research indicates the way health information is conveyed is influential; simply knowing that a specific topic was addressed but not how it was communicated creates challenges for determining how recommendations relate to behavior change (Gray & Harrington, 2011). The nature and perceived influence of these recommendations provide critical information for understanding how behavioral counseling may ultimately influence behavior.

Recognizing that the manner and content of communication can influence patient behavior, this next section will explore strategies, approaches, and interventions to optimize communication.

Strategies, Approaches, and Interventions to Optimize Communication

Strategies to Optimize Communication

In order to address these various communication challenges, a number of communication approaches and strategies can be considered. Patient-centered communication is generally considered the ideal approach for clinical care delivery (Mead & Bower, 2000). Patient-centeredness refers to responding to patients' preferences, values, and needs and can be evidenced through data-gathering skills (using open-ended questions), relationship skills (demonstrating empathy, support, reassurance), partnering skills (asking for patients' opinions, problem solving with the patient, enhancing patient understanding, paraphrasing) and counseling skills (being informative) (Roter, 2000). Patient-centered care, however, may be particularly challenging with older adults given the limited research conducted with this population and the resulting challenges of understanding and conveying pros and cons of different options (American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity, 2012).

Researchers have suggested a number of specific strategies, many of which are components of patient-centered care, to overcome communication challenges with older adults. These strategies include recommendations for patients and for providers. Patient-based strategies to support communication include bringing a list of questions and a companion to medical visits, remembering communication aids such as hearing aids or glasses, and taking notes during the appointment (Hickman et al., 2009). The

recommended strategies for providers relate to recognizing and addressing sensory limitations and patient comprehension. While many of these strategies would be valuable regardless of the patient, some of them may be particularly appropriate for patients with sensory or comprehension challenges. Therefore, some screening or assessment of patient abilities may help providers inform their communication strategies. Hickman and colleagues (2009) suggest that providers should develop an awareness of patient sensory limitations. To address sensory deficit components of communication and minimize the effects of hearing and vision loss, Adelman and colleagues (2000) suggest reducing background noise, speaking at slightly louder volumes, and being mindful of the distance between the provider and the patient. Sadowski (2011) suggests not only making written material accessible to low literacy individuals, but also being sure to pay attention to formatting and legibility for older adults who may suffer from visual impairments.

There are also a wide range of provider-based strategies to promote patient comprehension that go beyond addressing sensory limitations. Stewart and colleagues (2000) suggest that providers can enhance patient-provider communication if they take the time to provide a full explanation of recommendations, assess patient understanding, and discuss aspects of the patient's life context relevant to recommendations. Life context could include the patient's retirement status, financial resources, family composition and caregiver availability (Piette, Heisler, & Wagner, 2004). Williams and colleagues suggest (2002) limiting the amount of information provided at each visit and using teach-back techniques. In addition, providers may need to avoid using medical language, or put extra effort into providing explanations, when communicating with patients of lower health literacy abilities (Hadlow & Pitts, 1991). Kessels (2003) also

suggests that patient comprehension will be supported when information is specific and well organized. Lipkus (2007) suggests that utilizing numeric, verbal, and visual information may aid comprehension for discussing treatment options.

Interventions to Optimize Communication

Given the wide array of challenges to patient-provider communication, many researchers have explored interventions to improve communication. These interventions to promote communication have been directed to both patients and providers.

Patient focused interventions to optimize communication.

Focusing on patients, most interventions have focused on increasing patient clarification and questioning (Harrington, Noble, & Newman, 2004). Tennstedt (2000) suggests that patient activation interventions that focus on increasing sense of control and self-efficacy hold promise. For instance, Tennstedt (2000) created a two hour group program that involved modeling of patient behavior, role playing, and discussion of the negative consequences of passive involvement, as well as provision of a preparation booklet to support patient empowerment prior to their visit. She found that participation in this group resulted in greater visit involvement. Patients who participated in the intervention were more likely to bring a list of problems and questions to their visit and reported a greater number of active behaviors during the visit than those who did not participate.

Cegala and colleagues (2001) tested the effectiveness of a communication skills training booklet to improve older adults seeking, providing, and verifying of information. The patients received the training booklet three days before their appointment and then had a thirty minute in-person session prior to seeing their physician. Using audio-tapes

of the actual visits, the researchers found that the training resulted in more seeking and providing of information, though there were no differences in verification of information. Their findings were promising because not only did they show that a relatively brief intervention could be effective, but they also managed to increase patient participation without lengthening the overall visit. Thus, their approach shows promise even if visit time constraints cannot be altered.

Other researchers have found patient-focused approaches within the waiting room to be effective. Roter (1977) conducted a health education patient intervention in the waiting room with a predominantly older adult patient population. Results indicate that, compared to the control group, patients receiving the intervention asked more questions, had a greater internal locus of control, and were more likely to keep appointments. Greenfield and colleagues (1988) also conducted a waiting room intervention with patients that resulted in intervention participants eliciting twice as much information from providers as control participants; the intervention also resulted in a 14% reduction in intervention patients' blood sugar levels and a reduction in patients' functional limitations.

Provider focused interventions to promote communication.

Focusing on the provider is potentially a more effective way to improve patient-provider communication, as numerous patients interact with each provider. Heritage and colleagues (2007) conducted a study with 20 family physicians that demonstrated that even very small changes can significantly impact communication – and consequently quality of care. The 20 participating physicians received a brief communication skills training where they were presented with one of two approaches for soliciting additional

patient concerns after patients had expressed their primary concern; either they were trained to ask “is there ANYTHING else you want to address in the visit today?” or “is there SOMETHING else you want to address in the visit today?” Heritage and colleagues’ (2007) recorded the clinic visits and found that the “any” condition was no different from before the training whereas the “some” condition reduced patients’ unmet concerns by 78%; the training had no impact on visit length.

Message Design to Promote Diet and Physical Activity

The field of communication addresses message design elements that should be considered in the context of lifestyle recommendations. While not an exhaustive list of relevant aspects of message design, I am going to discuss the importance of message tailoring, message framing, and the value of including “action” information to optimize communication, particularly in the context of diet and physical activity.

Message tailoring to promote diet and physical activity.

Message tailoring refers to messages that are designed to reach a specific individual based on his or her individual characteristics (Kreuter, Bull, Clark, & Oswald, 1999). Almost all tailored research applies to computer oriented or printed messages, not interpersonal messages. Messages can be tailored based on a single characteristic or a set of variables (Kreuter & Wray, 2003), with the goal of increasing the personal relevance of a message to the intended recipient (Kreuter et al., 1999). Tailored messages are distinct from targeted messages; targeted messages are designed for a specific population subgroup, e.g. older adults with diabetes and obesity rather than a single individual (Kreuter & Wray, 2003). Kreuter (2003) suggests that tailored messages are more appropriate than targeted when there is significant variation within the audience of

interest in factors that are believed to be important to the given outcome. Considering the immense heterogeneity among older adults, tailored messages will likely be more appropriate than targeted messages for this population. A recent meta-analysis indicates that tailored messages tend to be more effective than targeted or generalized messages (Noar, Benac, & Harris, 2007). Thus, providers should keep in mind that the way they communicate lifestyle recommendations may need to vary based on the individual patient.

For messages to be tailored it must be feasible to gather data on individual characteristics and behaviors (Kreuter & Wray, 2003). Health care providers, through their personal contact and knowledge of each patient, have this capacity. An individual's health profile may be an important consideration for tailoring lifestyle recommendations. Engaging in physical activity or a healthy diet will likely mean something different for an individual with osteoporosis, one with diabetes, one with arthritis, and for individuals with various combinations of these and other conditions. Health promotion messages could address the value of physical activity or diet to that individual given their overall health status and disease profile, the potential costs of inactivity or poor diet, and instructions for how the individual could increase their activity or improve their diet given their personal barriers.

One strategy for tailoring lifestyle recommendations may be through motivational interviewing (Bennett, Lyons, Winters-Stone, Nail, & Scherer, 2007). Motivational interviewing is a counseling approach that was developed in the context of treating alcoholism and is purported to work by eliciting participants' own desire for change and helping them think through the advantages and disadvantages of the desired behavior,

reducing their decisional uncertainty. Motivational interviewing differs from traditional clinical care because the interview is more of a joint process between the patient and the provider, whereby goals are developed together, rather than the provider just instructing the patient on what to do (Hettema, Steele, & Miller, 2005). This interviewing process may also allow for the opportunity to confirm that patients and providers have the same understanding about what the behavior involves, or help the pair come to a shared understanding, and explore specific strategies for how to achieve the desired behavior change. Motivational interviewing may be utilized in the promotion of lifestyle behaviors by emphasizing how the behavior may benefit the individual given his or her personal circumstances.

Prior research suggests that motivational interviewing conducted by a physician is feasible and effective (Lai Douglas, Cahill, Qin, & Tang, 2010; Ockene et al., 1999; Ockene et al., 1994). While the majority of randomized controlled studies examining motivational interviewing involve a psychologist as the provider, nearly a third of studies examining motivational interview have a physician as the provider (Rubak, Sandbaek, Lauritzen, & Christensen, 2005). Rubak and colleagues (2005) found that physicians were actually more likely to have an effect through their motivational interviewing sessions on a range of patient outcomes than any other provider type such as dieticians and nurses. The likelihood of the motivational interviewing having an effect was greater when the visit length was longer and when there were repeated encounters (Rubak et al., 2005). While this research indicates physicians can be successful using motivational interviewing approaches, visit time constraints may make this more challenging outside of a research setting. Since older adults often have frequent visits, it is possible that

elements of the motivational interview could be conducted over time; or, perhaps individuals could be referred to other providers, e.g., psychologists or dietitians, who might have more time available to engage in motivational interviewing.

Message framing to promote diet and physical activity.

Prior communication research has also highlighted the potential importance of message framing in prevention communication. Salovey, Schneider, and Apanovitch (2002) define message framing as, “the emphasis in the message on the positive or negative consequences of adopting or failing to adopt a particular health-relevant behavior. Gain-framed messages usually present the benefits that are accrued through adopting the behavior...Lost-framed messages generally convey the costs of not adopting the requested behavior” (p. 392). Gain-framed messages emphasize benefits or advantages of the behavior and loss-framed messages emphasize costs or disadvantages (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999). O’Keefe and Jensen (2007) conducted a meta-analysis of gain and loss-framed messages and found that gain-framed appeals were more persuasive for disease prevention. Latimer, Salovey, and Rothman (2007) concluded that while there was a small advantage of gain-framed over loss-framed messages for disease prevention, this advantage was significant only in the case of dental care behaviors.

Research seems to suggest that message framing may not be an important factor in the context of diet. Van Assema, Martens, Ruiter, and Brug (2001) explored the role of positive or negative message framing through informational booklets on adult’s dietary attitudes and intentions to change and found no impact of framing. Researchers in

another study found that price, but not health messages, impacted individuals choice of healthy food items in a restaurant (Horgen & Brownell, 2002).

In the context of physical activity, however, message framing may be more important. A review of message framing in the context of physical activity suggests that positively framed messages are more influential (Latimer, Brawley, & Bassett, 2010). Latimer and colleagues (2008) conducted a randomized trial of 322 sedentary, healthy callers to the US National Cancer Institute's Information Service and found that gain-framed messages were the most effective for increasing physical activity intentions, self-efficacy, and subsequent physical activity participation. In another study, Latimer and colleagues (2008) found that when an individual's regulatory focus (health promotion oriented or disease prevention oriented) and physical activity message framing (promotion focused message or prevention focused message) were aligned, participants reported greater engagement in and positive feelings about physical activity two weeks after being exposed to the messages. In another study, Jones and colleagues (2003) suggested that when the source of a message is perceived as credible, messages framed to focus on the benefits of physical activity are more influential on patient exercise intentions and behaviors than fear-based messages. The advantage of gain-framed exercise messages has also been found in the context of older patients (with a mean age of 63) entering cardiac rehabilitation programs (McCall & Ginis, 2004). These findings suggest that providers may want to focus on the benefits of physical activity in their efforts to promote greater activity among their patients.

Action messages to promote diet and physical activity.

When trying to influence patient behavior it may be important not only to convince patients of the value of the suggested behavior and motivate them to engage in the behavior, but also to provide suggestions for how to make the desired changes. I am referring to these practical suggestions for how to make changes as “action” messages – as they provide the details for how one can take action to make a change. McCaul and colleagues (2002) explored the role of various message elements in the context of receipt of flu shots among older adults who had not submitted Medicare reimbursement requests for flu shots in the prior year. Medicare recipients were randomized by county to receive reminder letters, action letters, or no letters. The reminder letters involved either a general reminder, a focus on the potential loss of failing to receive the vaccination, or a focus on the potential benefits of obtaining the vaccination. The action letters provided information about where and when individuals could receive the shot. They found that reminder type did not make a difference, but that action messages worked better than no messages (McCaul et al., 2002). These findings suggest that to maximize the value of educating individuals about the importance of a preventive measure, factual information should be accompanied by “action” information that provides details for the individual about how they can use the knowledge.

The Elaboration Likelihood Model (ELM) provides a framework to help demonstrate how action information increases the likelihood of following a provider’s recommendation. By providing specific steps for change, action information may enhance an individual’s efficacy or perceived ability to follow a recommendation. According to the ELM, this enhanced efficacy is more likely to result in long-lasting

change. The ELM suggests that there are two routes to persuasion, central and peripheral (Petty & Cacioppo, 1986). The central route occurs when one thoughtfully considers the message. The central route can occur only if the individual is both motivated to think about the message and has the ability to do so. The peripheral route refers to instances when one uses peripheral cues such as source attractiveness or credibility to determine their agreement with the message. The peripheral route occurs when one either lacks the motivation or the ability to think about the message in greater depth. The ELM suggests that the central route is more likely to lead to long-lasting change than the peripheral route. In actuality, the central-peripheral route distinction likely exists on a continuum rather than as two discrete options, but the implications remain the same.

When considering the ELM in the context of efforts to promote physical activity or healthy eating among older adults, messages should encourage central processing to lead to more long-lasting, healthy lifestyles. In order to increase the likelihood that messages will be processed centrally, individuals should be motivated to attend to the message and able to process the message. Thus, the message design approaches selected should pique an individual's interest but not be so complex as to make message comprehension a challenge, and should provide individuals with actionable information - clear steps or goals for how to achieve the desired behavior change.

Summary

In this chapter, I reported that older adults have frequent healthcare visits, providing opportunities for prevention counseling, and that the health complexity associated with age can both increase and decrease the likelihood of such counseling. I also discussed the importance of clinical communication, highlighting the challenges of

communicating with older adults and some of the limits in current communication. To offer context for providers' difficulties communicating with older adults, I discussed the limits in geriatrics and communication training. Finally, I concluded by summarizing the current state of knowledge regarding diet and physical activity communication among older adults and strategies, approaches, and interventions to optimize communication and promote these behaviors. In the next chapter I will present my methodology for addressing gaps in our current knowledge regarding diet and physical activity discussions with older adults. Specifically, I will describe the steps I took in terms of data collection and data analysis to answer the research question: How do providers discuss diet and physical activity with older patients *and* how do patients perceive this advice?

Chapter 4: Methodology

This study involved several approaches to address the two specific aims: 1) whether and how providers discuss diet and physical activity with their older patients and 2) whether and how patient perceptions of their provider's physical activity and dietary recommendations influence engagement in these behaviors. The first component of my research methodology was an audio-recording of the patient-provider interaction. Immediately after this interaction, participants completed a brief socio-demographic questionnaire (see Appendix A) and assessment of their dietary and physical activity behaviors (see Appendixes B and C). The participants then engaged in a semi-structured qualitative interview about their recollections and perspectives on the visit that just took place (See Appendix D). The interviews examined the elements of Self Determination Theory – autonomy, confidence, and relatedness– in the context of any dietary and/or physical activity recommendations that may have taken place. In order to ensure the process ran smoothly and interview questions were understandable, these procedures were piloted with five patients. All protocols were approved by the University of Kentucky's Institutional Research Board. Data collection took place between September 6, 2011 and March 28, 2012.

Setting

All participants were recruited from the Departments of Internal Medicine and Family and Community Medicine at the University of Kentucky Medical Center. Both clinics are primary care practices that serve patients of all ages; while internal medicine practices often do not include children, this particularly clinic also has a medical-pediatrics program and therefore serves patients of all ages. As part of an academic medical center, both clinics also involve resident physicians and medical students.

Differences between the clinical departments of Family Medicine and Internal Medicine

Providers in the two clinics differ somewhat in their training; family medicine providers receive more psychosocial training and consequently report greater feelings of lifestyle counseling preparation, but these differences do not seem to relate to counseling frequency or patient outcomes (Abramson et al., 2000; Bertakis et al., 1998). While both specialties' residency programs aim to prepare physicians capable of providing comprehensive preventive and psychosocial care (Rivo, Saultz, Wartman, & DeWitt, 1994), family practice residencies involve nearly three times as many hours of formal training in psychosocial issues as internal medicine residencies (Gaufberg et al., 2001). Accordingly, family practice residents are slightly more likely to feel prepared to counsel about diet and exercise; 64% of family practice residents and 53% of internal medicine residents in their final year of residency training report being very prepared to counsel patients about diet and exercise (Park, Wolfe, Gokhale, Winickoff, & Rigotti, 2005). In a survey of practicing physicians, 51% of family practice respondents and 77% of internal medicine respondents reported feeling that they received less training than they needed in medical school and residency regarding nutrition in chronic illness (Darer, Hwang, Pham, Bass, & Anderson, 2004). Despite the slightly greater psychosocial training and feelings of preparedness to counsel regarding diet and physical activity in family medicine than in internal medicine, Abramson and colleagues (2000) found that 48% of internal medicine physicians and only 38% of family practice physicians report counseling the majority of their patients about the benefits of aerobic exercise. Despite these differences, one study randomly assigning patients to family medicine or internal medicine clinics found no

significant differences in self-reported health status or patient satisfaction between patients in the two clinics (Bertakis et al., 1998). This study found that differences in patient outcomes could be attributed to physician behavior, not specialty. For the purposes of the present study, both clinics were included to increase the diversity of the participating patients and providers.

While the clinics both involved medical students and resident physicians, the ways in which they did so differed. In Family and Community Medicine, patients' appointments could be scheduled directly with a resident physician, who could then consult with his or her attending provider as needed. In Internal Medicine patients' appointments could only be scheduled with the attending provider. Patients could be seen by their provider's medical residents, but these visits frequently also included some interaction with the attending provider directly. Medical students in both clinics varied in their participation level, with some just observing the visits, and others serving as the initial provider who would then report to the resident physician or attending provider.

The clinics also differed in the approvals required to conduct research with their patients. Approval from the clinic director was required from both clinics as part of the IRB approval process. The Family and Community Medicine clinic also requires all IRB-approved studies go through their internal review process – the Clinic Research Review Committee (CRRC). Due to my inclusion of medical residents in the study protocol, the CRRC review process also required Graduate Medical Education Committee (GMEC) approval. My recruitment in Family and Community Medicine was delayed considerably due to these additional review processes. Recruitment in Family and Community Medicine was further delayed because another study involving older patients was already

underway and the clinic director requested I postpone my recruitment so that the clinic would not have two studies simultaneously recruiting from the same population.

Eligibility and Recruitment

Providers from the departments of Internal Medicine and Family and Community Medicine in the Kentucky Clinic were recruited and consented to have their visits audio-taped. Providers included resident physicians within these departments. Providers were recruited through email, and personal contacts were used to increase participation. Clinic directors in both departments also allowed me to introduce myself and my study at provider meetings to enhance participation.

Patients were recruited from clinic waiting areas. Each clinic had a list of their patients for the day (Internal Medicine's patient list was available to be viewed the day prior). That list included patient name, sex, birthdate, provider name, and appointment time. Using that list, I was able to identify all patients ages 65 and older of providers who had agreed to participate. I then created a list of potentially eligible patients for the day. I arrived at the appropriate clinic 20 minutes in advance of the scheduled appointment time(s).

I was notified about a potential participant's arrival in slightly different fashions within the two clinics. In Internal Medicine I used their master check-in sheet and added a notation to notify me when an eligible patient arrived. I then sat in the waiting area in a location where I could easily establish eye contact with the front desk staff. Upon arrival, patients wrote down their name and unless the front desk staff was ready for them immediately, the patient had a seat, and then was called up by name to complete his or her registration. Once the patient was done with his or her registration process, the front

desk staff would get my attention and I could then approach the patient. Since most patients had their name called out, if the front desk staff forgot to notify me, I often was still aware of a patient's arrival.

In the Department of Family and Community Medicine I wrote the names of the potential patients on a post-it note and gave it the registration staff. Registration staff would then notify me when someone arrived. Since the staff in Family and Community Medicine did not work directly off of a master sheet, the possibility that I was not notified of a patient's arrival was greater in this clinic than in Internal Medicine. The likelihood that an eligible patient would arrive and I would not be aware of his or her presence until he or she was called back for the appointment was also heightened because in Family and Community Medicine the patient registration process did not consistently have a component that involved the patient's name being called out.

Once I was notified of a potential participant the recruitment approach was identical between the two clinics. I introduced myself to the patient and provided a brief overview of the study asking if he or she might be willing to participate. If the patient expressed an initial willingness, I then went through the general consent form and the Health Insurance Portability and Accountability Act (HIPAA) consent form, answering questions and obtaining signatures prior to the patient being called back. Once a patient was called back, I followed him or her to the room and once the nurse exited, I entered, set up the audio-recorders, and waited either directly outside the room or somewhere in easy line of sight. If any provider reached for the patient's chart or approached the patient's room who had not already consented to participate (e.g. a different medical

resident from that attending provider or a new medical student), I provided a brief overview and obtained his or her consent before he or she entered the room.

A quota sampling approach was used to ensure a diverse patient sample by sex and race. If I was notified of two patients arriving at the same time, I would approach the patient who was most underrepresented (e.g., male or minority) first, in hopes of increasing the numbers in these groups. In addition, once I was able to recruit from Family and Community Medicine, I made an extra effort to include patients from that clinic so that both clinics would be represented.

Patient Eligibility

Participants were eligible if they were seeing a consenting provider, they were age 65 or older, were being seen for a routine visit, and were fluent in English. Patients who were too hard of hearing to participate in an interview or were unable or unwilling to speak at length were excluded. Individuals who were cognitively impaired (either as evidenced by difficulty comprehending the consent form, from patient or companion self-report, or by provider notification) were also excluded. Patients who had previously participated or declined participation were not eligible. Participating providers and patients were assured that all study information would be kept confidential and no individually identifying information would be provided in any presentation of study findings. Participants were informed the study was about communication, but the specific focus on diet and physical activity was not discussed. When a companion was present with the patient, he or she was informed that the visit would be recorded, but was not asked to complete any consent forms.

Procedures

After obtaining consent from both providers and patients, I recorded patients' visits. I placed the recorders in the room as soon as the nurse exited and began recording prior to the provider's arrival. After the patient was finished seeing all providers, he or she completed the socio-demographic questionnaire and behavioral assessment which included the BRFSS questions on fruit and vegetable consumption and the Godin Leisure Time Exercise Questionnaire (GLTEQ) Assessment of Physical activity. To preempt literacy concerns or vision difficulties, I read all questions to the participants. Then I engaged the patient in the semi-structured qualitative interview about their recollections and perspectives on the visit that just took place, with a focus on any dietary or physical activity recommendations that may have been covered. If the patient indicated no discussion of diet or physical activity, I still conducted the interview, but due to the reduced number of relevant questions the interview was of shorter duration. I tape recorded all interviews. Transcription and analysis of clinic visit interactions and interviews was ongoing. Participants were not compensated for their participation.

Sample.

One hundred fifteen patients participated in the audio-recording phase of the study. Recruitment continued until informational redundancy or saturation had been reached in the interview phase of the study, e.g., when interviews no longer seemed to provide novel insights. In order to recruit these 115 patient participants and record their visits, 84 providers consented to participate. The provider participants included 16 attending physicians, 3 nurse practitioners, 1 physician assistant, 44 resident physicians, and 20 medical students.

Instruments.

The Behavioral Risk Factor Surveillance System fruit and vegetable questions and the Godin Leisure Time Exercise Questionnaire (GLTEQ) were used as brief assessments of healthy diet and physical activity to document patients' current activity levels without unduly burdening participants.

The Behavioral Risk Factor Surveillance System fruit and vegetable questions.

While Chapter 2 conveyed that there are many different dimensions of healthy eating, I chose the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) questions to get a brief picture of an individual's fruit and vegetable consumption. The BRFSS fruit and vegetable questionnaire consists of six questions to determine the frequency of consumption of juice, fruit, green salad, potatoes, carrots, and other vegetables. The BRFSS questions were chosen over more comprehensive Food Frequency Questionnaires (FFQs) which typically take between 30 to 60 minutes to complete (Matthys, Pynaert, De Keyzer, & De Henauw, 2007; Wirt & Collins, 2009). The BRFSS fruit and vegetable questions are highly correlated with food frequency questionnaires and also correlated, but to a lesser extent, with diet recalls/records (Serdula et al., 1993). Since research had indicated fruit and vegetable consumption could serve as an exemplar of dietary quality (Jacques & Tucker, 2001; Staser et al., 2011) and given that I wanted only a brief assessment with the goal of categorizing individuals into groups based on dietary quality (and not to measure any specific dietary intake), the BRFSS questions were sufficient (Thompson & Suba, 2008). Meeting the recommended intake for fruit and vegetables is an essential component of healthy eating,

increases the likelihood individuals are obtaining proper nutrients and fiber, and decreases the likelihood of various chronic conditions (Bazzano et al., 2002; Hung et al., 2004; Riboli & Norat, 2003; Su & Arab, 2006). The BRFSS questions have been used with diverse ages and have moderate validity (Byers et al., 1997; Centers for Disease Control and Prevention, 2011; Coates et al., 1995; Serdula et al., 1993). Researchers suggest that this measure may underestimate actual intake, but given that I was interested in broad categories and not exact amounts, this limitation was acceptable (Field et al., 1998).

Godin Leisure Time Exercise Questionnaire.

The Godin Leisure Time Exercise Questionnaire (GLTEQ), a self-report questionnaire assessment of physical activity, was chosen for the current study for a number of practical reasons (Godin & Shephard, 1985). The GTLEQ is a brief assessment of the number of 15-minute periods of mild, moderate, and strenuous exercise individuals engage in during a typical week (Godin & Shephard, 1985). While there are more sensitive questionnaire measures of physical activity, this brief assessment avoided unduly burdening participants with an extensive list of questions and was appropriate for the study purpose of describing general activity levels (and not attempting to measure changes). Even if resources had allowed for pedometers or accelerometers, since patient consent was not obtained prior to the day of the clinic visit there would not have been any opportunity to wear these devices for any meaningful period of time. The GLTEQ assessment of physical activity has moderate test-retest reliability for light to moderate physical activity and high test-retest reliability for strenuous activity. In terms of validity, there are moderate associations between the GLTEQ scores and other physical

activity and biometric measures (Godin & Shephard, 1985; Jacobs et al., 1993; Miller, Freedson, & Kline, 1994).

The original GLTEQ is a 4-item questionnaire. The first three items ask during a typical week how many times, on average, the individual does strenuous, moderate, and mild physical activity for 15 minutes or more at a time during their free time. Strenuous is defined as “heart beats rapidly,” moderate as “not exhausting,” and mild as “minimal effort,” and examples are provided of each type of activity. The final item asks during a typical week how often the individual engages in any regular activity during leisure time long enough to work up a sweat. Since this final question is not part of the composite score, the GLTEQ also exists in a short-form, three item format (Godin & Shephard, 1985), which has been used in previous research (Gosney, Scott, Snook, & Motl, 2007; Motl, McAuley, Snook, & Scott, 2006) and was the version I selected for my research.

Physical activity questionnaires designed specifically for older adults, such as the Physical Activity Scale for the Elderly and the Community Healthy Activities Model Program for Seniors Activities Questionnaire for Older Adults, are significantly longer than the GLTEQ (Stewart et al., 2001; Washburn, Smith, Jette, & Janney, 1993). I did not feel this additional time burden to participants was warranted given that the goal of this assessment was only to describe general activity levels. While the GLTEQ was not designed specifically for older adults, it has been used with older adult populations and has demonstrated validity with chair stands and walking speed (Scarmeas et al., 2009; White, Wojcicki, & McAuley, 2009).

Socio-demographic questionnaire.

The socio-demographic questionnaire included age, race/ethnicity, sex, education level, marital status, income, subjective financial status, subjective health status, health conditions, height, and weight. There were also a series of questions pertaining to the patient's physician and content of recent and past visits. The questionnaire concluded with four questions taken from Jay and colleagues (2010) regarding motivations and intentions to make changes to diet and physical activity.

Semi-structured interview.

Finally, in order to address these gaps in our understanding of how providers discuss lifestyle recommendations with their older patients, what patients recall, and how these recommendations translate, or fail to translate, into behavior change, I developed semi-structured interview questions to explore older patients' perceptions of provider recommendations for diet and physical activity. Guided by Self-Determination Theory (SDT), these questions include the perceived importance of diet and physical activity, confidence in the ability to change behaviors, and sense of connection with the provider. The patient interviews explored whether and how physician recommendations support the constructs of SDT.

The Researcher as an Instrument

Qualitative data analysis involves interpretation which is influenced by the researcher. Waterman (1998) suggests that recognizing that the researcher plays a role in directing data collection and data analysis is an issue of "reflexive validity" (Waterman, 1998). To enhance this form of validity, I will share some of my background as the primary researcher. I have training and experience in qualitative research methods. I

have completed both an introductory qualitative research methods course and an applied qualitative methods course. I have been involved in interview and focus group research in both community and clinical settings (Bardach & Schoenberg, 2012; Schoenberg, Howell, Swanson, Grosh, & Bardach, 2013). My role in qualitative research projects has ranged from research assistant to principal investigator (Bardach & Rowles, 2012; Bardach, Tarasenko, & Schoenberg, 2011; Schoenberg, Baltisberger, Bardach, & Dignan, 2010). I have been involved at all stages of the qualitative research process from conceptualization and design to data management, analysis, and reporting and dissemination of results.

In addition to specifying my qualitative research experience, I would also like to provide some details about my perspectives on health behaviors as this will better enable the reader to evaluate how my knowledge base and preconceived notions may have influenced my interpretation of the data. I also have in-depth knowledge of health behavior change theories (stemming from various psychology and public health courses as well as independent reading). I began my research with the belief that providers have the ability to influence their patients' health behaviors, though I was cautious not to frame my questions with the assumption that this influence always occurs. I also believe in the value of healthy lifestyle behaviors and do a decent job with my own diet and physical activity. I was aware of the potential biases my own beliefs, values, and practices could create, but believe that by engaging in this reflexive analysis and consciously considering these factors I was able to focus on the participants' perceptions (Krefting, 1991). While aware of factors in the literature that affect an individual's health

behavior choices, I remained open and responsive to participant insights (Morse, Barrett, Mayan, Olson, & Spiers, 2002).

Data Analysis

The data from this study come from the following sources: a) the patient's questionnaire data including sociodemographics, diet and physical activity behaviors, recall of visit content, provider relationship, and health behavior motivation and plans, b) the visit - including details about which clinic the patient was seen in and by which provider, as well as the visit audio-recordings, and c) the post-visit semi-structured interview audio-recordings. This section describes how these data were analyzed.

Patient Participant Sociodemographics and Health Behavior Questionnaire Data.

These data were used to summarize the patient participants and are presented in the results section in tables. I conducted descriptive analyses for all patient sociodemographics provided by participants including sex, race/ethnicity, educational attainment, subjective financial status, income, marital status, subjective health status. Mean, range, and standard deviation were calculated for individuals' total number of chronic conditions and for patient age. Using the height and weight information provided by patients, body mass index (BMI) was calculated using the National Heart Lung and Blood Institute calculator (U.S. Department of Health and Human Services, 2012) and the resulting BMIs were categorized into underweight (BMI <18.5), normal weight (BMI=18.5-24.9), overweight (BMI=25-29.9), and obese (BMI of 30 or greater) according to the National Heart Lung and Blood Institute criteria. Frequencies were provided for the resulting BMI categories.

The Behavioral Risk Factor Surveillance System (BRFSS) fruit and vegetable questionnaire was scored to produce two numbers: total daily fruit consumption and total daily vegetable consumption. These totals were calculated by converting the frequencies to times per day and totaling daily fruit consumption (juice + fruit) and totaling daily vegetable consumption (sum of the other items). The Godin Leisure Time Exercise Questionnaire (GLTEQ) was scored to produce a total weekly leisure activity score. The composite weekly activity leisure score, expressed in METS (metabolic equivalents of physical activity in resting oxygen) was calculated as 9 x response to strenuous + 5 x response to moderate + 3 x response to mild (Wilson & Muon, 2008). One way to interpret these values is to exclude the mild level and summarize with a score of 24 or greater as having substantial health benefits, 14 to 23 as moderate benefits, and less than 14 as insufficiently active (Godin, 2011). Means, standard deviations, and ranges were calculated for both the BRFSS and GLTEQ measures.

Descriptive statistics were also calculated for the other questionnaire data. Frequencies were computed for the presence of a companion during the appointment, recall of diet or physical activity discussion during the visit the patient just had, prior discussion of diet and physical activity, and motivations and plans regarding diet and physical activity changes. Means, standard deviations, and ranges were calculated for how many times the patient has seen the provider in the past year, how long the patient has been seeing the current provider, and self-rated recall of the visit conversation.

Visit Characteristics.

The visit refers to the patient-provider interaction that was recorded for the purposes of this study. Prior to listening to the visit recordings, I calculated some basic

visit details. I calculated frequencies for which clinic patients were seen in (Internal Medicine or Family and Community Medicine) and the attending physician or provider they were scheduled to see. I then calculated the mean, standard deviation, and range for the number of participating patients per attending physician or scheduled provider. This information is included to provide a sense of the context for the data collection.

Qualitative Approach for Specific Aim #1

The clinic visit audio-recordings provided the data to address specific aim #1, whether and how providers discuss diet and physical activity with their older patients. To address this aim, I engaged in qualitative description using a naturalistic inquiry orientation (Lincoln & Guba, 1985). Qualitative description is “a rich, straight description of an experience or an event” (Neergaard, Olesen, Andersen, & Sondergaard, 2009), where this description is itself the goal (Sandelowski, 2000). Descriptive validity, a description with which others viewing the same information would agree, is the goal of qualitative description (Sandelowski, 2000). Qualitative description can incorporate a number of different approaches, but frequently utilizes content analysis and can also encompass quasi-statistical analysis to summarize data (Neergaard et al., 2009). Qualitative description sometimes involves methods that are more characteristic of other qualitative approaches, for instance qualitative description may include a form of constant comparison but not with the goal of producing theory (Sandelowski, 2000).

Naturalistic inquiry refers to studying something in its typical state, or as uncontrolled a state as possible (Lincoln & Guba, 1985). This approach is in contrast to experimental research where features of the environment are altered or manipulated for research purposes. While the requirements of informed consent and the need for the

audio recorders to obtain data necessitated some departure from normal visit proceedings, I chose not to be physically present in the exam room so as to minimize the influence of research involvement on patient's visits. I selected this naturalistic inquiry orientation to increase the translational potential of the research findings. By conducting research in conditions with high external validity, e.g. where the clinic visit is as similar to the normal care experience as possible, findings can more easily be translated back to practice. This similarity between the research and standard care experience negate the need for any additional steps of having to figure out how an experimental condition with researcher constraints applies to the regular clinical environment.

Qualitative content analysis involves codes that are generated from the data itself rather than pre-existing codes, as in quantitative content analysis, and these codes may be modified as needed to fit the data (Miller & Crabtree, 1992; Sandelowski, 2000).

Content analysis refers to methods of inference based upon systematic identification of features of messages (Holsti, 1969). Consistent with Hsieh and Shannon (2005), the qualitative content analysis method enables, "the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (p. 1278). I selected this approach because the research question of the first specific aim - whether and how providers discuss diet and physical activity with their older patients - is a topic that has not previously been explored and therefore warrants the development of inductive categories (Kondracki & Wellman, 2002).

I selected qualitative description over existing valid and reliable analytic approaches designed specifically for analysis of medical visits, such as the Roter Interaction Analysis System (RIAS) and the Davis Observation Code (Callahan &

Bertakis, 1991; Detmar, Muller, Wever, Schornagel, & Aaronson, 2001), because these latter approaches were not appropriate for addressing the current research question. RIAS is designed for exploring interpersonal relationships between patients and providers, but does not focus on the content of these interactions (Johnson, Roter, Powe, & Cooper, 2004; Little et al., 2001a). Even when researchers have adapted the RIAS to include some attention to the content of the visit, the RIAS still only identifies whether content is present, not the nature of that content (Detmar et al., 2001). While the Davis Observation Code (DOC) system was created to measure the observance of health education and health promotion discussion (Callahan & Bertakis, 1991), the DOC, similar to the RIAS, evaluates only the presence of this content and not the specific nature of the content. Research validating the DOC did, however, provide further support for examining the visit recording rather than relying on chart documentation, as Callahan and Bertakis (1991) found that charts did not always document health education discussions, and also sometimes documented discussions that did not occur.

Analysis for Specific Aim #1

To analyze the visit audio recordings, I began by transcribing the initial recordings in entirety to help establish what criteria should be used for the selective transcription. Selective transcription refers to an incomplete transcription; in the current project this meant transcribing select sections verbatim but not the entire recording. Prior researchers have suggested that audio-recordings do not always need to be transcribed verbatim in entirety (Halcomb & Davidson, 2006; Seale, 1997; van Teijlingen & Ireland, 2003). In part, the choice to selectively transcribe reflects practical, feasibility concerns. Britten (1995) discusses the time demands of interview transcription, suggesting that one

hour of taped interview equates to roughly six to seven hours of transcription. This assessment was consistent with my transcription experience.

The current research involved 115 patient participants. The average for their time spent with any provider was 27 minutes, equating to over 3,000 minutes of visit communication, or nearly 52 hours of visit communication. These many hours of tape involve over 300 hours of transcription time, ignoring the time taken to sift through pauses in the recordings. Further, given the research focus on diet and physical activity, a verbatim account of the visit content not pertaining to these behaviors was not necessary for examining how diet and physical activity were discussed. Previous researchers have agreed that evaluating what a verbatim transcript would add to the particular question of inquiry is an appropriate way to select what sections to transcribe, being sure not to neglect how a topic was raised or what response followed (Deppermann & Schutte, 2008).

Accordingly, following the initial transcriptions, I engaged in selective transcription for the audio recordings of patient visits. Accurate transcription is an important aspect of rigor (Milne & Oberle, 2005). To ensure accurate transcription, I listened to the complete audio files again after completing initial transcriptions. As suggested by Silverman, if upon reading the transcripts word meaning was unclear, I returned to the audio recordings to capture tone (Silverman, 1999). Periodically throughout the transcription process I also transcribed other recordings in entirety to be sure that no relevant content was being overlooked. When engaging in selective transcription, I always erred on the side of being overly inclusive. At a minimum, regardless of how brief or tangential, I transcribed in entirety all discussion of diet or

appetite, physical activity or physical fitness, and weight, including the context for these discussions. Weight was included for its possible relevance to diet and physical activity. In addition, any references to age or overall health were also included, as initial interviews suggested these might be important concepts to examine. When not transcribed verbatim, I summarized visit content that did not relate to any of these areas in the transcript, including the time at which it occurred.

I included time stamps, the time to the second that had elapsed from the beginning of the audio-recording, anytime a provider exited or entered the exam room. Using these time stamps, I calculated totals for the number of waiting periods, the time the patient spent waiting, the time the patient spent with any provider, and the time with the attending physician or primary provider specifically. I calculated these descriptive details about the visit to provide some context to better understand the clinical visit and what opportunities may have existed for diet and physical activity discussions to take place. Waiting time can also be viewed as an indicator for perceived time pressure, e.g. if the provider is running late he or she may feel rushed during the visit, which can influence the quantity of information exchanged (Detmar et al., 2001; Morrell, Evans, Morris, & Roland, 1986). Time stamps were also included to indicate when discussions of diet or physical activity occurred. These time stamps indicating when diet or physical activity discussions occurred enabled easy review of these discussions when needed.

In order to assess the relative contribution that the patient and the provider(s) made to the discussions, I copied and pasted all physical activity and dietary discussion from the transcripts into separate documents. I then sorted the words based on speaker and used the Microsoft Word word count feature to calculate how many words the patient

said on the topic and how many words the provider(s) said on the topic. I then calculated the relative contribution of the patient by taking the number of words the patient said and dividing by the number of words spoken by both the patient and the provider. The relative contribution of the provider(s) was calculated as the number of words spoken on the topic by the provider divided by the number of the words spoken by the patient and the provider on the topic. Previous researchers have used analytic features of Microsoft Word in their analysis, but I am unaware of other studies relying on the word count feature to compare contributions of different speakers (Merriman, Ades, & Seffrin, 2002).

To facilitate data management for the qualitative description, I created two excel spreadsheets, one for dietary discussions and the other for physical activity discussions. I created a separate row for each participant. The columns then reflected the categories of the content analysis: whether diet or physical activity was discussed, who initiated it, in what context (e.g. diabetes, functional concerns etc.), were benefits of the behavior discussed and if so what benefits were indicated, were any suggestions provided and if so what were they, was encouragement provided for current activities, did the patient provide any self-assessment of his or her current activity level (e.g. reports of being satisfied or recognizing need for change), and any additional information.

In quantitative content analysis checklists are often utilized to code the presence of predetermined factors in the data (Detmar et al., 2001); in utilizing a qualitative approach I also included details of these factors (e.g. I did not only indicate whether or not benefits of the behavior were discussed, but also included what benefits were discussed). I completed the spreadsheet using the transcripts and created codes based on

the data, not based on pre-existing expectations, modifying these codes as needed to assure accurate description. I added an additional column to summarize the nature of the communication. Discussions were categorized into inquiries (brief/perfunctory or more detailed), sharing (brief reference or details), and recommendations (specific or vague).

Ensuring Rigor

Reliability can be demonstrated through two means: stability (intra-rater reliability) and reproducibility (inter-rater reliability) (Stemler, 2001). To assure stability, after all initial coding was complete I put the data aside for a few weeks and then recoded 10% of the data to ensure consistent interpretation of codes. This enabled me to clarify any ambiguous codes and make sure all coding decisions were transparent. This has been referred to as a “code-recode” procedure, with a suggested wait time of at least two weeks between coding sessions (Krefting, 1991). To assure reproducibility, e.g., consistency of coding between different individuals (Weber, 1990), 10% of the data, an acceptable degree of overlap (Neuendorf, 2002), was then coded by another coder who was trained to be familiar with the coding scheme. This coder was herself an older adult with extensive professional experience evaluating written documents in educational settings. While she had not previously engaged in qualitative coding for research purposes, her work background provided her with the careful attention to detail required for this coding task. This process is consistent with the content analytic process described by Haney and colleagues (1998) whereby the coding scheme is developed from the data, coding is done independently, reliability is checked, and these steps are repeated as needed when codes require modification to improve agreement. My co-coder and I discussed all discrepancies, and we made changes or clarification to the coding scheme as

needed. Ultimately we achieved an inter-rater reliability of 88%, defined as the number of coding instances that were in agreement divided by the total number of coding instances (Weber, 1990). The validity of the data was also enhanced through triangulation of data sources; in this case data collection included patients and providers in two separate clinics, at various times of day over the course of several months. This variation in data sources helps provide a fuller range of information to help establish a thorough understanding of provider recommendations regarding diet and physical activity (Knafl, 1989).

Post-Visit Interviews.

Qualitative Approach for Specific Aim #2

Specific Aim #2 explores whether and how patient perceptions of their provider's physical activity and dietary recommendations influence engagement in these behaviors. I selected a grounded theory approach to address this aim. Grounded theory refers to a systematic inductive approach to analyze data and build theory based on the data to address the research question (Denzin & Lincoln, 1994). Similar to many qualitative approaches, grounded theory is not hypothesis driven because the goal is to develop theory from data, not preconceived notions (Glaser & Strauss, 1967).

Analysis for Specific Aim #2

I transcribed the post-visit interviews in their entirety. I read each transcript repeatedly to ensure a broad understanding and familiarity of the content prior to any formal analysis (Patton, 2002). Throughout the data collection process I took field notes. These field notes included impressions of the participants, including any concerns regarding participant comprehension, salient visit factors (e.g., the provider running over

an hour late and the patient being highly impatient), insights into key factors influencing the participant's diet and physical activity motivations, and themes that seemed to be emerging. The field notes provided a means of recording information that would otherwise become irretrievable as my memories faded. These notes provided context for understanding individuals (Montgomery & Bailey, 2007). The early identification of themes through field notes not only assisted theory generation, but also enabled me to ask additional questions in subsequent interviews when new areas of potential inquiry emerged (Crabtree & Miller, 1999). For instance, a few initial participants referenced how they were doing for their age, and used those self-perceptions as explanations for why they did not need to make any changes to their diet or physical activity. Once I made this observation, I asked all subsequent participants how they thought they were doing for their age, specifically in regard to diet and physical activity. This ongoing note taking and informal theme identification and analysis also assisted with informational saturation and were utilized as initial approaches to enhance rigor by providing opportunities to conduct member checks with participants (Lincoln & Guba, 1985). Informational saturation refers to when additional interviews corroborate existing findings but do not provide new information (Kidd & Parshall, 2000). This concurrent data collection and analysis is consistent with Morse and colleagues' (2002) discussion regarding the importance of including verification processes during and not just at the end of the study.

In order to examine specific aim #2, I selected only the visits that included diet or physical activity recommendations, as identified previously. Prior to exploring the influence of these recommendations, I first examined the extent to which these

individuals remembered the recommendations and the accuracy with which they remembered the recommendations. The first step in this process was to examine whether the patient correctly responded that diet or physical activity was discussed; the accuracy of this response demonstrated a general recollection that the content was part of the visit. In instances where there were discrepancies between the discussion identified in the transcription and the participant's recall that the discussion took place, I returned to the transcript and my field notes to explore possible explanations for why they did not recall this content. Was the recommendation said in passing? Did the patient have a more pressing concern that overshadowed these recommendations? Did the patient have memory or comprehension issues that may have made it harder for them to recall? This thorough understanding of context enhances credibility and authenticity (Beer, 1997). While it is impossible to say with certainty why someone forgot a discussion of diet or physical activity, exploring the possible reasons discussions were not recalled helped sensitize me to factors I should consider among those who did recall discussions. For instance, I realized that the lifestyle discussions that were not recalled were frequently quite brief and often seemed to be said in passing rather than as a specific focus. This observation suggested the importance of examining the extent and content of diet and physical activity discussions among those who did recall these discussions having taken place.

After trying to understand the reasons some individuals did not recall diet or physical activity recommendations, I then returned to those who remembered that diet or physical activity was discussed in their visit. For these individuals who accurately recalled this discussion had taken place, I explored how the patient's description of the

conversation matched with the transcribed content. To aid in this comparison, I expanded upon the previously created spreadsheet. I added columns to reflect the questions and responses to the post visit interview questions pertaining to patient's recollections of his or her provider's diet and physical activity recommendations. These new columns included who the discussion was with, how long the discussion lasted, whether the participant recalls benefits being discussed, the context of the discussion, and any other information. By placing the information into this structure I was able to answer the following questions: Did the patient correctly recall what was recommended? If any benefits or rationale for the recommendation were provided, were patients able to recall the stated benefits or rationale? Did the patient's description of the conversation seem to align with the conversation that took place? I added an additional column, "accuracy of recall," and used this column to indicate my impressions of whether it seemed the participant correctly recalled the content of the discussion or whether his or her description of the discussion did not seem to align with the discussion that had taken place.

Finally, to answer the core question of this aim, how the recommendation influenced the patient, I expanded the spreadsheet to include participant responses to questions about perceived influence, confidence, motivation, and why the behavior is important. The excel spreadsheet enabled me to easily compare across participants and identify emerging themes, facilitating the creation of a codebook. The codebook was a list of codes, conceptually sorted, to enable line-by-line coding of the data (see Appendix E). I also included illustrative quotes to demonstrate the various codes, enhancing the clarity of the intent and nature of each code, ensuring the codes were grounded in the

data, and enabling easy retrieval of coding examples (Silverman, 1999). I created the codebook to ensure systematic, in-depth analysis of patient responses. While the literature on health behavior change influenced my choice of interview questions, and while some themes could be anticipated, the codebook and subsequent analysis were not constrained by existing frameworks (Bernard, 2002; Miles & Huberman, 1994; Willms et al., 1990).

As Morse and colleagues indicate (2002), qualitative research is iterative, with a continual process of checking, modifying, and confirming; this iterative process was reflected in the codebook development process. Following the initial codebook development, I returned to the field notes and transcripts to ensure contextual information, e.g., memory challenges, was not overlooked. I coded the post-visit interviews of the patients with diet and/or physical activity recommendations line-by-line, making sure to code each distinct meaning unit (Patton, 2002). This line-by-line coding and categorizing of the data is referred to as open-coding (Strauss & Corbin, 1998). By this phase of the research, I had already read through each transcript repeatedly so I began the coding with a very strong grasp of the overall content.

I repeatedly refined the codebook as needed and reviewed previously coded transcripts to check if new codes or code changes influenced existing coding. The process of creating the codebook and the careful utilization of the codebook with the data enabled me to engage in axial and selective coding, grouping codes, developing inductive categories, exploring relationships, and identifying emerging themes (Creswell, 1998; Hsieh & Shannon, 2005; Kondracki & Wellman, 2002; Patton, 2002; Strauss & Corbin, 1998). This coding process enabled the development of a grounded theory to address

whether and how provider recommendations influence patient engagement in healthy diet and physical activity behaviors. As just described, this theory development process involves what Morse and colleagues refer to as a “macro-micro perspective,” continuously evaluating ideas against the data so that ideas can be refined (Morse et al., 2002). Throughout this process I took notes, also referred to as memoing, regarding emerging relationships and theory (Glaser, 1998).

Ensuring Rigor

I used some of the same techniques to ensure rigor as I had previously for addressing specific aim #1. I selected ten percent of the transcripts at random and to be co-coded by another coder to ensure reliability (Tinsley & Weiss, 1975). This coder had extensive experience in qualitative research and qualitative coding and shared my research interest in diet and physical activity. We periodically compared coding outcomes to ensure consistency. Consistency in this context refers to viewing the same information and classifying it in the same way, demonstrating that the codebook categories are clear and fit that data. We discussed discrepancies and added and revised codes as needed, recoding transcripts when modifications warranted it. I calculated inter-rater reliability by the number of codes agreed on by two independent raters divided by the total number of codes used by the two raters (Bernard & Ryan, 1998). This iterative coding process ultimately resulted in an inter-rater reliability of 83%, demonstrating an acceptable level of agreement. After establishing this level of reliability, I coded the remaining interviews without a co-coder.

Summary

In this chapter I described my data collection and analysis methods to explore provider discussions of diet and physical activity with older adults and the perceived influence of these recommendations. In the next chapter I will share my findings from this process.

Chapter 5: Findings

In this dissertation I sought to understand how providers discuss diet and physical activity with older patients and how patients perceive this advice. To gain this understanding, I explored two specific aims: 1) whether and how providers discuss diet and physical activity with their older patients and 2) patient perceptions of whether and how these recommendations influence engagement in healthy diet and physical activity. In order to answer these questions I recorded the primary care visits of over a hundred patients, ranging in age from 65 to 95, and interviewed each patient immediately following his or her visit. I collected patients' socio-demographic information, and semi-structured interviews included questions about the visit that had just taken place, with a particular focus on any diet or physical activity recommendations that may have been discussed. The interview questions were informed by Self-Determination Theory, but my goal was to gain an in-depth understanding of the patients' perceptions of the conversation and its influence, rather than exploring constructs from existing theoretical frameworks. Analysis involved transcription, qualitative description, and constant comparison.

Sample Characteristics

For this research to be conducted, the participation of two groups was necessary: 1) providers willing to be recorded and have their patients recruited, and 2) patients willing to participate. While my research question and accordingly my analysis focus on the patient participants, I also will describe the provider participants, as these individuals were a critical part of this research. In order to provide context for the visits, I will also present a brief description of the clinical encounter before I describe the patient sample.

Description of Provider Participants

A total of 84 providers consented to participate. These 84 providers included 16 attending physicians (11 practicing in Internal Medicine and five in Family and Community Medicine), 20 medical students (17 currently on rotation in Internal Medicine and three currently on rotation in Family and Community Medicine), three nurse practitioners (one practicing in Internal Medicine and two in Family and Community Medicine), one physician assistant (practicing in Internal Medicine), and 44 resident physicians (40 practicing in Internal Medicine and four in Family and Community Medicine). Only four providers actively declined participation (three attending physicians practicing in Internal Medicine and one resident physician in Family and Community Medicine). Reasons for non-participation were provided by only two of the providers declining participation. These reasons for non-participation were 1) a belief that the clinic is not run in a manner supportive of communication and 2) feeling overextended – this provider reported already being involved with a lot of educational activities and not wanting to be burdened by involvement in another project. There was also one provider who initially consented to participate and later chose to end her participation. She indicated that she already felt significant time pressures in her daily practice with the demands of seeing so many patients and felt that she did not have the time for the additional perceived demand of being involved in a research study.

Based on the scheduling practices in the two clinics, patient appointments only could be scheduled with 24 of 84 providers who consented to participate. Appointments were schedulable with attending physicians or nurse practitioners in either clinic, with the

physician assistant in Internal Medicine, or with resident physicians in Family and Community Medicine. In Internal Medicine patients could be seen predominantly by a resident physician, but the patient appointment was still scheduled with the attending physician. Accordingly, there were a total of 24 providers (13 in Internal Medicine and 11 in Family and Community Medicine) with whom visits could be scheduled. Of these 24 providers, 20 had patients (12 in Internal Medicine, 8 in Family and Community Medicine) who participated in the research project. The participating providers included 15 attending physicians (11 in Internal Medicine, four in Family and Community Medicine), one nurse practitioner (Family and Community Medicine), one physician assistant (Internal Medicine), and three resident physicians (Family and Community Medicine). Of these 20 providers, ten were male and ten were female. Participating providers each had an average of five patients who participated, ranging from 1 patient to 19 patients. Due to the longer recruitment time in Internal Medicine, participating providers in Internal Medicine contributed more patients, on average, than those providers who participated from Family and Community Medicine. Regarding patients' relationships with their providers, patients reported seeing their providers on average four times a year, though the range was rather large; some patients reported just a single annual visit and one patient had 20 visits with her provider within the last year. Patients reported fairly long durations of seeing the same provider, an average of 6.5 years. See Table 1.

Table 1. Characteristics of the Participating Providers, N=20

Provider Characteristic	N (%)
<i>Clinic of Provider</i>	
Internal Medicine	12 (60.0)
Family and Community Medicine	8 (40.0)
<i>Provider Type</i>	
Attending physician	15 (75.0)
Nurse practitioner	1 (5.0)
Physician assistant	1 (5.0)
Resident physician	3 (15.0)
<i>Provider Sex</i>	
Male	10 (50.0)
Female	10 (50.0)
<i>Number of participating patients per provider, mean (sd, range)</i>	5.2 (4.6, 1-19)
Internal Medicine	7.2 (5.1, 2-19)
Family and Community Medicine	2.3 (1.0, 1-4)
<i>Number of visits to provider last year, mean (sd, range)*</i>	3.9 (3.2, 1-20)
<i>Duration of seeing same provider (years), mean (sd, range)*</i>	6.5 (7.4, 0-35)

**If patient provided a range, I took the midpoint of the range (e.g. 4 to 5 visits was interpreted as 4.5 visits).*

The remaining 60 providers who consented to participate (the 40 Internal Medicine resident physicians, the 17 medical students rotating in Internal Medicine, and the three medical students rotating in Family and Community Medicine) were involved with patients' care, but at least from an administrative standpoint, did not have the primary responsibility for the appointment. These 60 individuals all agreed to participate after their attending physician agreed to participate.

Description of the Clinical Encounter

This description will provide a brief overview of the clinical setting or context in which the observed patient visits took place. The majority of the patient visits took place in the Internal Medicine clinic. Just over half of the visits were scheduled for the afternoon. Using the visit audio-recordings, time characteristics of the visit were calculated. Patients spent an average of 11.5 minutes with the provider with whom their

visit was scheduled and an average of 26.6 minutes with any provider (including resident physicians with whom the visit was not scheduled and medical students). Visits also involved an average of 17.6 minutes of waiting time typically distributed in two waiting periods. Waiting periods refers to the number of times patients had to wait to see his or her provider once being brought to the examination room. Typically, there was an initially waiting period after the nurse left while waiting for a provider to come to the room. Oftentimes, the first provider to come to the room was a resident physician or medical student, who would leave the patient (for the patient's second waiting period) to consult with the attending physician before the visit was concluded. These waiting times do not take into account the initial waiting period in the waiting room before being called back to the visit; when patients first arrived they had not yet consented to participate and therefore I did not record their arrival time. Most patients (72%) were not accompanied during their visit; when patients were accompanied, spouses and children were the most likely companions to attend a visit with a patient. Patients reported being very satisfied with the quality of their care, providing an average quality rating of 9.5 out of 10. (See Table 2)

Table 2. Clinical Encounter Details: Location, Time, Duration, Companions, and Quality of Care, N=104

Visit Characteristics	
<i>Clinic in which the patient was seen, n (%)</i>	
Internal Medicine	86 (82.7)
Family and Community Medicine	18 (17.3)
<i>Visit time, n (%)</i>	
Morning	48 (46.2)
Afternoon	56 (53.9)
<i>Minutes with scheduled provider, mean (sd, range)*</i>	11.5 (10.6, 0-44.0)
<i>Minutes with any provider, mean (sd, range)</i>	26.6 (14.2, 4.2-77.7)
<i>Minutes waiting, mean (sd, range)</i>	17.6 (12.5, 0-71.8)
<i>Number of times patient had to wait, mean (sd, range)</i>	2 (1, 0-5)
<i>Companion present in visit, n (%)</i>	
No	75 (72.1)
Spouse	14 (13.5)
Child	12 (11.5)
Other	3 (2.9)
<i>Quality of care rating, mean (sd, range)</i>	9.5 (1.1, 5-10)

*Scheduled provider refers to attending physicians or the physician assistant in Internal Medicine or to attending physicians, nurse practitioners, or resident physicians in Family and Community Medicine.

Description of Patient Participants

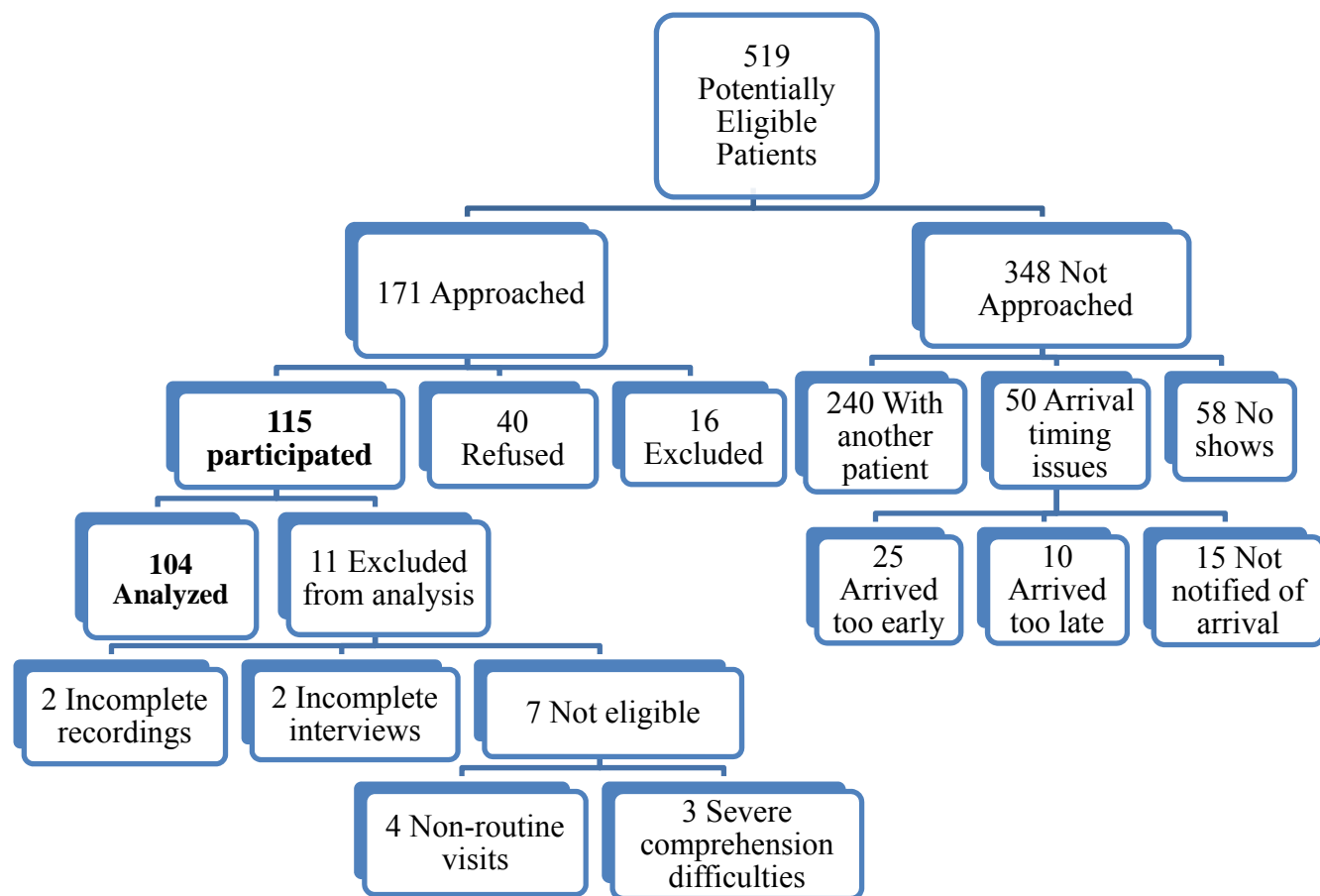
The patients are the focus of the current research and will be described in this section. I begin by describing how the recruitment process resulted in the patient sample used for analysis. I then describe the sociodemographic, health characteristics, and health behaviors of the patient sample. I then compare the participants with non-participants. Finally, I present the results of the patient recall of diet and physical activity discussions. This recall information is explored within the context of past discussions with the same provider and past discussions with other providers.

Patient recruitment.

Patient recruitment was a very slow, laborious process. During the six month recruitment period, there were 519 potentially eligible patient participants at times when I was available for recruitment. This initial eligibility assessment was based on seeing a

provider who consented to participate, being 65 years of age or older, and being seen for a routine visit. Of those 519 individuals, I approached 171. The remaining 348 patients were not approached for various reasons: 240 because I was with another patient at that time, 50 due to arrival timing issues (25 arrived too early, 10 arrived too late, and 15 I was not notified of their arrival), and 58 were “no shows.” (“No shows” refers to individuals who did not show up for their scheduled appointment.) Of the 171 patients whom I approached, 115 participated (95 from Internal Medicine, 20 from Family and Community Medicine), 40 refused, and 16 were excluded (See Figure 1).

Figure 1. Patient Recruitment



When potential participants refused, I inquired as to the reason they preferred not to participate. Potential participants refused for various reasons, including time commitments immediately following the scheduled clinic appointment (14), not feeling comfortable having his or her visit recorded (4), experiencing too much pain (2), not wanting to keep a companion waiting (1), and having a bad day (1). The remaining 18 individuals who declined to participate did not provide specific reasons for refusing, indicating either that they would prefer not to participate or that they were not interested today but might be willing to participate in the future.

I considered patients ineligible if they were too hard of hearing to participate, were not fluent in English, or had cognitive impairments (either as evidenced by difficulty comprehending the consent form, from patient or companion self-report, or by provider notification). Reasons for the exclusion of the 16 individuals who were approached and assessed as ineligible included cognitive difficulties (7), hearing difficulties (4), not English speaking (2), discouraged by provider (2), and forgot to set up recorder (1). This final reason for exclusion – forgot to set up recorder – refers to an individual who otherwise would have been eligible, who had agreed to participate, but for whom I neglected to start the recording when she went back to the exam room. Given that I would not have any objective visit data on this patient I chose to exclude her. While 115 patients participated, I limited the analysis to 104 patients. The reasons I excluded individuals from analysis included incomplete recordings (2), incomplete interviews (2), and patient visits which based on recordings met exclusionary criteria (7: 4 non-routine visits, 3 severe comprehension difficulties).

Sociodemographic, health characteristics, and health behaviors of the patient sample.

The 104 patients who were included in the analysis were on average 73 years old, ranging in age from 65 to 95. There were slightly more female (54%) than male participants (46%). The majority (59%) were married. The sample was highly educated, with 69% reporting some post-secondary education. The majority (58%) of the participants perceived they had more than enough to get by financially, with just over a third (38%) indicating household incomes above \$50,000 a year. The majority (82%) of the sample was white, non-Hispanic. (See Table 3)

Table 3. Patient Sociodemographic Characteristics, N=104

Characteristics	
<i>Age, mean (SD, range)</i>	73.0 (6.4, 65-95)
<i>Sex, No. (%)</i>	
Male	48 (46.2)
Female	56 (53.9)
<i>Marital Status, No. (%)</i>	
Married/partnered	61 (58.7)
Separated/Divorced	18 (17.3)
Widowed	22 (21.2)
Single, never married	3 (2.9)
<i>Education, No. (%)^c</i>	
<High School	16 (15.4)
High School/GED	16 (15.4)
Some college/AA degree/tech school	25 (24.0)
College graduate	16 (15.4)
Graduate degree	31 (29.8)
<i>Perceived Financial Status, No. (%)</i>	
More than enough	60 (57.7)
Just enough	24 (23.1)
Struggle to get by	20 (19.2)
<i>Household Income</i>	
Unknown/refused	10 (9.6)
Below \$10,000	12 (11.5)
\$10,000-\$20,000	13 (12.5)
\$20,001-\$30,000	13 (12.5)
\$30,001-\$40,000	10 (9.6)
\$40,001-\$50,000	6 (5.8)
Above \$50,000	40 (38.5)
<i>Race/Ethnicity, No. (%)</i>	
White, not Hispanic	85 (81.7)
White, Hispanic	2 (1.9)
Asian, not Hispanic	2 (1.9)
African American, not Hispanic	15 (14.4)

Patients reported an average of 2.4 chronic conditions. Approximately a third of the sample reported being in excellent or very good health, another third in good health, and the remaining third in fair, poor, or very poor health. Self-reported weight and height were entered into the National Heart Lung and Blood Institute calculator to compute body mass index (BMI) and categorized into underweight (BMI <18.5), normal weight (BMI=18.5-24.9), overweight (BMI=25-29.9), and obese (BMI of 30 or greater)

according to the National Heart Lung and Blood Institute criteria (U.S. Department of Health and Human Services, 2012). Just under a third of the sample had BMIs within the normal weight range, one individual was underweight, and the remaining participants were overweight or obese.

In terms of current physical activity status, I used responses to the Godin Leisure Time Exercise Questionnaire (GLTEQ) to produce a total weekly leisure activity score (Godin & Shepard, 1997). This score was calculated, as suggested by prior researchers, as $9 \times \text{response to strenuous} + 5 \times \text{response to moderate} + 3 \times \text{response to mild}$ (Wilson & Muon, 2008). The resulting composite weekly physical activity score is expressed in METS (metabolic equivalents of physical activity in resting oxygen). Researchers typically seem to use this number to examine changes over time (Dlugonski, 2011), though there are also some suggested approaches for how to interpret the score directly (Godin, 2011). The composite score is presented here primarily to demonstrate the range in patient's activity levels, and to illustrate that most patient's activity levels fall on the low-end of the activity spectrum. For more easily interpretable physical activity indicators, I also reported how many individuals reported no leisure time physical activity at any level of intensity and how many reported no moderate or vigorous leisure time physical activity. A third of the patients had no leisure time physical activity and two thirds of the participating patients had no moderate or vigorous leisure time physical activity.

Responses to the Behavioral Risk Factor Surveillance System (BRFSS) fruit and vegetable questions were converted to times the given item is consumed per day (Centers for Disease Control and Prevention, 2011). Total daily fruit consumption was the sum of

times patients reported consuming juice a day plus times they reported consuming fruit per day. Total vegetable consumption per day was the sum of the other four items (salad, potatoes, carrots, and other vegetables). Responses demonstrated a wide range in participants' self-reported consumption of fruits and vegetables, with an average of 1.9 fruits a day and 2.9 vegetables a day, averaging 4.8 total fruit and vegetables a day. This corresponded to 58.8% of patients consuming fewer than five fruits and vegetables a day. (See Table 4)

Table 4. Patient Health Status and Health Behaviors, N=104

Characteristics	
<i>Chronic conditions, mean (SD, range)</i>	2.4 (1.5, 0-8)
<i>Perceived health status, n (%)</i>	
Excellent	11 (10.6)
Very Good	22 (21.2)
Good	36 (34.6)
Fair	24 (23.1)
Poor	8 (7.7)
Very Poor	3 (2.9)
<i>Self-reported BMI, mean (SD, range)</i>	28.1 (5.9, 16.6-54.5)
Underweight	1 (1.0)
Normal Weight	31 (29.8)
Overweight	36 (34.6)
Obese	36 (34.6)
<i>Physical activity*</i>	
Composite weekly physical activity score, mean (sd, range)	12.6 (22.5, 0-126)
No leisure time physical activity, n (%)	31 (30.4)
No moderate or vigorous leisure time physical activity, n (%)	66 (64.7)
<i>Total daily fruit consumption, mean (sd, range)**</i>	1.9 (1.2, 0-6)
<i>Total daily vegetable consumption, mean (sd, range)**</i>	2.9 (1.6, 0.5-8.3)
<i>Total daily fruit and vegetable consumption, mean (sd, range)**</i>	4.8 (2.2, 0.6-12.2)
Less than 5 fruit and vegetables a daily, n (%)*	60 (58.8)
Five or more fruit and vegetables a day, n (%)*	42 (41.2)

*These responses were missing for two individuals so percentages are out of 102.

**To convert to times per day I divided weekly estimates by 7 and monthly estimates by 30. If a range was provided, e.g., 2-3/week, I used the midpoint of the range, 2.5/week, to calculate the daily value.

Comparing participants with non-participants.

My identification method for eligible patients used the clinic lists for patients for the day; these lists included provider, patient age, and patient sex. This limited information enabled me to explore whether the patients who participated in the current study differed from those who were eligible but did not participate. Based on two-tailed t-tests, there were no significant differences in age between the participants and the non-participants (either grouped together or with refused, excluded, and not approached combined) (see Table 5). Using a chi-square test, there was no difference in terms of sex for participants and all non-participants grouped together or between the participants and the refused and not approached groups. However, using a Fisher Exact test due to the small cell counts, the excluded group had significantly more females than the participant group, $p = .02$.

Table 5. Comparison of Age and Sex Characteristics of Participants and Non-Participants

	Participants (N=115)	Refused (N=40)	Excluded (N=16)	Not Approached (N=348)
Patient Characteristics				
Age, Mean (sd, range)	73.0 (6.4, 65-95)	71.9 (6.7, 65-93)	75.8 (10.2, 65-91)	72.7 (6.7, 65-96)
Sex, N (%)				
Male	52 (45.2)	20 (50.0)	2 (12.5)	134 (38.5)
Female	63 (54.8)	20 (50.0)	14 (87.5)	214 (61.5)

Patient recall of diet and physical activity discussions.

I asked patients about whether diet and physical activity was discussed during their visit. A third of patients reported no discussion of diet or physical activity, just over a third reported discussion of both diet and physical activity, roughly a quarter reported discussion of just physical activity, and the remaining patients reported discussing diet

but not physical activity. Patients believed they had fairly good memories of their visits, with an average of 8.7 out of 10 reported for the extent remembered from their visit. (See Table 6 for details.)

Table 6. Patient Recall of Visit Content, N=104

Characteristics	
<i>Recall of diet or physical activity, N (%)</i>	
No, neither	35 (33.7)
Just diet	7 (6.7)
Just physical activity	24 (23.1)
Both diet and physical activity	38 (36.5)
<i>Extent remembered, mean (SD, range)*</i>	8.7 (1.7, 3-10)

**Extent remembered refers to how much of the conversation that just took place in the patients visit did they believe they remembered. This was assessed on a scale from 1 to 10 with 1 being didn't remember anything that was said and 10 being remembered everything that was said.*

I also examined recollections of diet and physical activity discussions in the present visit within the context of prior discussions. Since patients typically had an extensive history with their current provider (with an average of 6.5 years seeing the provider and nearly four visits a year), I thought it would be helpful to understand if diet and physical activity discussions were part of a continued pattern of discussion or whether they were the first recollected instance of these topics being addressed. Similarly, if patients did not recall diet and physical activity content in the present visit, I wanted to know if their providers had discussed these behaviors before or if they had never been addressed. I asked patients both about past discussions with the same provider and, recognizing that patients often have multiple providers, past discussions with any provider.

Of the patients who reported diet or physical activity being discussed in their current visit, most had also discussed these areas with the same provider within the past year. In contrast, many of the patients who reported no discussion of these behaviors

today also reported no prior discussion with the same provider. Nearly two thirds of patients who reported discussing diet and physical activity in their current visit also reported discussing these behaviors with other providers in the past. I also calculated the number of individuals who reported never discussing diet or physical activity with any provider. “Never discussing” referred to no recollection of discussion today, and no recollection of any past discussion with any provider in the past. Almost 20% of patients reported never discussing diet with any provider and 13.5% of patients reported never discussing physical activity with any provider. (See Table 7.)

Table 7. Dietary and Physical Activity Discussions in the Context of Past Discussions, N=104

	<i>Patient reports diet discussed today</i>		<i>Patient reports physical activity discussed today</i>	
	<i>Yes</i>	<i>No (n=59)</i>	<i>Yes (n=62)</i>	<i>No (n=42)</i>
	<i>(n=45)</i>			
<i>Past behavior discussion with same provider, n (%)</i>				
No	7 (15.6)	28 (47.5)	7 (11.3)	18 (42.9)
Within the past year	29 (64.4)	16 (27.1)	44 (71.0)	19 (45.2)
More than a year ago	5 (11.1)	12 (20.3)	5 (8.1)	4 (9.5)
No prior visits with this provider	4 (8.9)	3 (5.1)	6 (9.7)	1 (2.4)
<i>Past behavior discussion with other providers, n (%)</i>	17 (37.8)	33 (55.9)	23 (37.1)	23 (54.8)
No, behavior not discussed	27 (60.0)	25 (42.4)	38 (61.3)	18 (42.9)
Yes, behavior discussed	1 (2.2)	1 (1.7)	1 (1.6)	1 (2.4)
Missing				
<i>Behavior never discussed, any provider, n (%)</i>	.	20 (19.2)	.	14 (13.5)

Whether and How Providers Discuss Diet and Physical Activity with Their Older Patients

In order to answer specific aim 1, whether and how providers discuss diet and physical activity with their older patients, I began by addressing the first part of this aim,

whether diet and physical activity are discussed. I had already examined patient recollections for whether diet and physical activity were discussed, but patient recollections may not accurately reflect the true frequency of discussions. To identify all instances of diet and physical activity discussions I used the transcriptions of the audio-recordings. I included all instances of these items, regardless of how brief the discussions were. All subsequent analyses focused only on the visits where diet and physical activity were discussed. I explored how diet and physical activity were discussed by examining the extent of the conversation – the duration that these topics were discussed.

To explore the nature of these physical activity and diet discussions I examined who initiated the discussions and explored both the patient and the provider contribution to the discussions. I investigated the use of questions, whether and how patients provided information about their current behaviors, whether patients provided any self-assessment of current behaviors, whether providers encouraged patients' current or planned behaviors, and whether the benefits of these healthy behaviors were discussed. I also evaluated the context for these discussions.

To provide background for specific aim 2, I also analyzed whether or not any recommendations were discussed. To better understand the nature of the physical activity and diet recommendations that were discussed, I explored whether they were vague or specific. I also examined the duration of the diet and physical activity discussions in the context of whether or not recommendations were provided. I then calculated the percent of the discussion the provider contributed and compared the provider contribution in instances where recommendations were provided and instances

where no recommendations were provided. Finally, I examined the purpose of the recommendations provided.

The Extent to Which Physical Activity and Diet Were Discussed: Frequency and Duration of Discussions

Physical activity and diet were discussed, at least to some extent, in the majority of patient visits. Physical activity was mentioned in 75 instances, or during 72% of patient visits. Diet was mentioned in 70 instances, or during 67% of patient visits. Focusing just on the visits with these behavioral discussions, the discussions of physical activity and diet lasted about a minute and a half. Discussions of physical activity had an average duration of one minute 29 seconds, ranging from one second to five minutes and 27 seconds. Discussions of diet had an average duration of one minute and 33 seconds, ranging from three seconds to nine minutes and 47 seconds. These very brief (e.g. one second and three second) discussions included a reference to exercise offered in passing and a question pertaining to diet that did not receive a reply (See Table 8).

Table 8. Frequency and Duration of Physical Activity and Diet Discussions

	<i>Physical Activity</i> <i>N=104</i>	<i>Diet</i> <i>N=104</i>
<i>Was behavior discussed during the visit?</i> <i>N(%)</i>		
Yes	75 (72.1)	70 (67.3)
No	29 (27.9)	34 (32.7)
<i>Duration of health behavior discussion</i>	<i>N=75</i>	<i>N=70</i>
Mean	1 minute 29 secs	1 minute 33 secs
Standard Deviation	1 minute 22 secs	1 minute 38 secs
Range	1 sec- 5 min 27 secs	3 secs- 9 min 47 secs

The Nature of Diet and Physical Activity Discussions

Initiation of the discussions.

Patients initiated 49.3% of physical activity discussions and 58.6% of diet discussions while providers initiated 46.7% and 38.6% of physical activity and diet discussions, respectively. While family members initiated only a small percentage of the total discussions, when evaluated relative to their attendance in the visits their contribution is slightly larger. Of the visits in which a family member was present, family members initiated 14.3% of physical activity discussions and 9.5% of diet discussions. (See Table 9)

Table 9. Initiation of Physical Activity and Diet Discussions*

	<i>Physical Activity</i> <i>N=75</i> <i>N (%)</i>	<i>Diet</i> <i>N=70</i> <i>N (%)</i>
Family member	3 (4.0)	2 (2.9)
Provider	35 (46.7)	27 (38.6)
Patient	37 (49.3)	41 (58.6)

** In some instances behavioral discussions took place on more than one occasion during the visit. This table only indicates which person initiated the discussion the first time it was raised during the visit. Provider includes attending providers, resident physicians, and medical students. Family members include daughters and husbands (while wives were also present during some visits, they were never the ones to initiate a discussion of physical activity or diet).*

Patient contributions to the physical activity and diet discussions.

Discussions of physical activity and diet typically involved the patient sharing some information about his or her current behaviors. Ninety-two percent of physical activity discussions included information about the patient's current physical activity and 75.7% of diet discussions included information about the patient's current diet. This information was offered both in response to provider questions and unprompted.

In addition to sharing current behaviors, patients shared self-assessments of their behaviors. Patients provided self-assessments of their physical activity in just under a

third (30.7%) of the physical activity discussions; these self-assessments typically involved recognition of the need for more physical activity. Patients provided dietary self-assessments more frequently (50% of the time); these assessments were pretty evenly divided between those who were satisfied with their current diet and those who recognized need for dietary changes. While patients frequently shared information about their current behaviors, and to a lesser extent shared perceptions regarding their current behaviors, patients very rarely asked any questions about physical activity or diet. Patients asked questions pertaining to physical activity in only 8% of all physical activity discussions and asked questions pertaining to diet in only 17% of all diet discussions. In the six instances where patients did ask questions pertaining to physical activity the questions included verification of the need to exercise, details regarding specific activities recommended, logistical questions regarding opportunities for physical therapy, and a request for an assistive device. In the 12 instances where patients did ask questions related to diet the questions included what that patient should or should not consume given his or her health conditions, factual questions pertaining to diet, and questions pertaining to personal dietary needs. (See Table 10)

Table 10. Patient Contributions to the Physical Activity and Diet Discussions

	Physical Activity (N=75) N (%)	Diet (N=70) N (%)
<i>Did the patient provide any information about his or her current behavior?*</i>		
Yes, in response to a question	39 (52.0)	21 (30.0)
Yes, offered spontaneously	30 (40.0)	32 (45.7)
No	6 (8.0)	17 (24.3)
<i>Did the patient provide any self-assessment of his or her current behavior?</i>		
Yes, satisfied with current behavior	6 (8.0)	17 (24.3)
Yes, recognizes need for improvements	17 (22.7)	18 (25.7)
No	52 (69.3)	35 (50.0)
<i>Did the patient ask any questions pertaining to behavior?</i>		
Yes	6 (8.0)	12 (17.1)
No	69 (92.0)	58 (82.9)

** If any behavior information was provided in response to a question, it was coded as in response to a question, even in instances where other information was provided spontaneously. When including all instances of patients providing information unprompted, 58.7% of physical activity discussions and 68.6% of diet discussions involved the patient sharing some information about his or her current behavior unprompted.*

Provider contribution to the physical activity and diet discussions.

Nearly two-thirds of the physical activity discussions and nearly half of the diet discussions involved the provider asking the patient questions regarding these behaviors. In both contexts, specific questions such as “what kind of exercise do you do?” were more common than broad questions such as “do you exercise?” or “are you eating ok?” After patients provided information about their current behaviors, providers offered encouragement in approximately half of all behavioral discussions. The benefits of physical activity and diet were discussed by both providers and by patients in just over a third (37.3%) of the visits with physical activity discussion. Benefits of diet were discussed in just over half (51.4%) of the visits with diet discussion. Overall, patients spoke more than providers during the physical activity and diet discussions. Providers

contributed 41.6% of the words in the physical activity discussions and 45.1% of the words in the diet discussions. (See Table 11) Discussion of alcohol was considered distinct from dietary discussion. Less than a quarter (22.9%) of visits that involved dietary discussions also mentioned alcohol.

Table 11. Provider Contribution to the Physical Activity and Diet Discussions

	<i>Physical Activity N=75 N (%)</i>	<i>Diet N=70 N (%)</i>
<i>Specificity of provider questions</i>		
Broad	12 (16.0)	10 (14.3)
Specific	40 (53.3)	22 (31.4)
No provider questions pertaining to behavior	23 (30.7)	38 (54.3)
<i>Provision of encouragement</i>		
Yes	37 (49.3)	35 (50.0)
No	38 (50.7)	35 (50.0)
<i>Discussion of benefits of the behavior</i>		
Yes	28 (37.3)	36 (51.4)
No	47 (62.7)	34 (48.6)
<i>Percent of discussion provider contributed</i>		
Mean	41.6%	45.1%
SD	25.8%	28.9%
Range	0-100%	0-100%

Context for the initiation of diet and physical activity discussions: Topics leading into diet and physical activity discussions.

To better understand how physical activity and diet were discussed, I explored what discussion immediately preceded the initiation of these topics. If the discussion immediately preceding initiation of diet or physical activity was somehow connected to these topics, I considered this preceding topic as the context for the diet or physical activity discussion. If, however, there did not seem to be any link between the diet or physical activity discussion and the topic immediately preceding, I considered there to be no context for the diet or physical activity discussion.

Physical activity discussions most frequently occurred in the context of functional health concerns, such as shortness of breath, fatigue, balance difficulties and falls, weakness, and endurance. Existing conditions such as arthritis, blood pressure, diabetes and blood sugar, cholesterol, neuropathy, or osteoporosis – sometimes discussed solely in relation to lab values, e.g., high A1C values – provided the next most common context for physical activity discussions. The third most common context was no context at all, or what seemed to be part of a checklist of items the provider asked about, but not tied in to any existing discussion. Physical activity also came up in the context of pain, weight gain or weight loss, as an explanation for health – e.g., “I’m healthy because I work out,” as evidence of health – e.g., “because I’m healthy I can now do...,” and physical therapy. Physical activity also arose in several single occasions, including memory, mental health, and lifestyle changes associated with a recent move to assisted living.

Diet discussions most frequently occurred in the context of existing conditions or lab values, such as blood pressure, blood sugar or diabetes, cholesterol, constipation, heart disease, gastroesophageal reflux disease (GERD), diverticulitis, celiac disease, or osteoporosis. Functional health concerns - such as sleep difficulties/nighttime urination, cramps, bloating, dehydration, dizziness, dry mouth, heartburn, kidney stones, water retention, appetite, and overcoming sickness - provided the next most common context for diet discussions. Weight gain or loss offered the third most common context for dietary discussions. The fourth most common context was no context at all or what seemed to be part of a checklist of items the provider asked about, but not tied in to any existing discussion. Diet discussions also took place in the context of medication/vitamins and in the context of memory, screening for depression, discussion

of flu shots/allergies, and a recent lifestyle change associated with a move to assisted living. (See Table 12)

Table 12. Context for Physical Activity and Diet Discussions*

	<i>Physical Activity</i>	<i>Diet</i>
	<i>N (%)</i>	<i>N (%)</i>
Functional health concerns	17 (22.7)	16 (22.9)
Existing conditions/lab values	16 (21.3)	39 (55.7)
None/ checklist	14 (18.7)	7 (10.0)
Pain	12 (16.0)	.
Weight (gain or loss)	11 (14.7)	14 (20.0)
Explanation for health	5 (6.7)	.
Evidence of health	3 (4.0)	.
Physical therapy	3 (4.0)	.
Medication/vitamins	.	4 (5.7)
Other	3 (4.0)	5 (7.1)

**Note: The total is greater than the total number of discussions and the percentages total more than 100% because if there were multiple contexts they were each counted. Therefore, the percentages indicate what percentage of all discussions regarding that behavior were raised in the given context.*

Provider recommendations for patient's physical activity and diet.

In 60% of the physical activity discussions, providers did not offer any recommendations. When providers did make recommendations, 30% of the recommendations were vague such as “try to exercise.” A third of all the physical activity recommendations involved suggestions for specific activities (n=10) such as walking or swimming; a third were equipment recommendations (n=10, e.g., braces or exercise equipment), and the remaining physical activity recommendations involved level of activity (n=3, e.g., continue with current level of activity), rehabilitation or physical therapy (n=4), or exercise-related testing such as a pulmonary function test or stress echocardiogram (n=2).

In 57% of the diet discussions, providers did not offer any recommendations. When the provider made diet recommendations, a sixth of the recommendations were

vague recommendations such as “try to eat a little bit more healthy” or “work on diet.” Specific recommendations were most commonly instructions to reduce certain foods or fats (n=11), specific food suggestions (n=10), and suggestions regarding fluid consumption (n=7). Less commonly-offered specific recommendations included portion size information (n=3), suggested supplements (n=3), instructions for salt reduction (n=3), and discussion of how to get into a rehabilitation facility to improve the ability to eat (n=1). Some recommendations involved multiple items.

Visits that included discussion of diet or physical activity recommendations were on average approximately one minute longer than visits which involved discussion of diet or physical activity but no recommendations. Providers also contributed more of the words to the discussion when the visits involved recommendations than when the visits did not involve recommendations. (See Table 13)

Table 13. Provider Physical Activity and Diet Recommendations

	Physical Activity			Diet
<i>Was advice given?</i>	<i>N (%)</i>			<i>N (%)</i>
No recommendation	45 (60.0)			40 (57.1)
Vague Rec.	9 (12.0)			5 (7.1)
Specific Rec.	21 (28.0)			25 (35.7)
	<i>Visits with Recs</i>	<i>Visits without Recs</i>	<i>Visits with Recs</i>	<i>Visits without Recs</i>
<i>Duration of Discussion</i>	2 min 5 secs	1 min 6 secs	2 min 11 secs	1 min 4 secs
Mean	1 min 21 secs	1 min 15 secs	2 min 5 secs	59 secs
SD	8 secs	1 sec	6 secs - 9 min	3 secs
Minimum	4 min 58 secs	5 min 27 secs	47 secs	5 min 11 secs
Maximum				
<i>Percent of discussion provider contributed</i>				
Mean	49.6%	36.3%	55.5%	37.4%
SD	20.5%	27.7%	26.0%	29.0%
Range	18.5-92.0%	0-100%	4.1-100%	0-100%

The purposes of the 30 physical activity and 30 diet recommendations varied. I examined the discussion immediately preceding and following the recommendation to evaluate whether there was a reason provided for the recommendation. For instance, if the patient complained that he or she was experiencing fatigue and the provider suggested increased physical activity may help address the fatigue, I indicated that fatigue was the stated purpose of the physical activity recommendation. The stated purposes of the physical activity recommendations included to promote general health, to maintain/return to activities, to alleviate pain, for appearance, to control medical conditions (e.g., blood pressure, cholesterol), to improve energy/reduce fatigue, to reduce symptoms such as stiffness or numbness, to strengthen bones, to lose weight, and no specifically stated reason. The stated purposes of the diet recommendations included to reduce symptoms such as dizziness, water retention, nighttime urination, leg cramps, and constipation; for weight loss; to treat a virus/overcome sickness; for general health (to feel better or get adequate nutrients); to control medical conditions (e.g. diabetes/blood sugar, heart disease, cholesterol, high blood pressure, celiac disease, diverticulitis, osteoporosis); to maintain/return to activities (in this case increase ability to eat); and no specifically stated reason. (See Table 14)

Table 14. Stated Purposes of Physical Activity and Diet Recommendations

	Physical Activity	Diet
Ability to maintain/return to activities	4 (13.3)	1 (3.3)
Alleviate pain	5 (16.7)	.
Appearance	1 (3.3)	.
Control medical conditions	4 (13.3)	20 (66.7)
Energy/fatigue	4 (13.3)	.
General health	1 (3.3)	3 (10.0)
Reduce symptoms	4 (13.3)	6 (20.0)
Strengthen bones	2 (6.7)	.
Treat virus/overcome sickness	.	2 (6.7)
Weight loss	2(6.7)	6 (20.0)
Not specified	3 (1.0)	1 (3.3)

Whether and How Recommendations Influence Engagement in Healthy Diet and Physical Activity

To explore whether and how recommendations influence engagement in healthy diet and physical activity, immediately following patients' visits, I interviewed patients regarding the visit that had just occurred. I focused specifically on any discussion of diet or physical activity that had taken place and the perceived impact of recommendations, when they were provided. Interviewing patients enabled me to assess whether or not patients recalled diet and physical activity discussions and recommendations, and when recommendations were recalled, to obtain insight into the potential influence of these recommendations. Unfortunately, to measure the influence of provider diet and physical activity recommendations more definitively, a longitudinal research design would be required. Accordingly, feasibility concerns led me to rely on patient's perceptions of influence as the best proxy available for actual influence.

For those patients who did not recall discussions that involved recommendations, I speculate on possible explanations for the failure to recall these discussions. For those patients who did recall discussions with recommendations, I briefly discuss the accuracy

of these recommendations. I then explore the relationship between recommendations for diet and physical activity and patient motivation and plans to improve behaviors. Finally, I discuss findings from the patient interviews regarding how providers' recommendations influence patient diet and physical activity behaviors.

Recall of Physical Activity and Diet Discussions

The majority of patients correctly recalled whether or not discussions of physical activity and diet had occurred. For physical activity discussions, 81.7% patients had accurate recall for whether or not these discussions had taken place. Among those for whom physical activity discussions had taken place, accuracy was 78.7%. The ability to correctly recall that discussions had not taken place was even higher (89.7%). Specifically, 57% of patients remembered discussions of physical activity that had in fact taken place. An additional 25% of patients correctly recalled that discussions of physical activity had not taken place. There were three individuals with false positive recollections of physical activity, that is, they believed physical activity had been discussed when it had not been discussed. Finally, 15% of patients had false negative recollections of physical activity; that is, they failed to remember physical activity discussions that had taken place.

Patient recall for discussions of diet was not as accurate as it was for discussions of physical activity. For diet discussions, 66.3% patients had accurate recall for whether or not these discussions had taken place. Among those for whom diet discussions had taken place, accuracy was 57.1%. The ability to correctly recall that discussions had not taken place was fairly low (49.2%). Specifically, 38% of patients correctly recalled that discussions of diet had taken place. An additional 28% of patients correctly recalled that

discussions of diet had not taken place. There were five individuals who had false positive recollections of diet discussions; they believed diet had been discussed when it had not been. Finally, 29% of patients failed to remember diet discussions that had taken place. (See Table 15)

Table 15. Accuracy of Patient Recall of Physical Activity and Diet Discussion, N=104

	Physical activity	Diet
Correct positive	59 (56.7)	40 (38.5)
Correct negative	26 (25.0)	29 (27.9)
False positive	3 (2.9)	5 (2.5)
False negative	16 (15.4)	30 (28.9)

An independent samples t-test was conducted to compare duration of discussions between those who did and did not recall discussions having occurred. Dietary discussions were significantly longer among those who did recall the discussions ($M=123.88$ seconds, $SD=115.36$) than among those who did not recall the discussions ($M=51.60$ seconds, $SD= 43.60$), $t(68) = -3.26$, $p=.002$. There was no significant difference between the duration of physical activity discussions among those who recalled the discussions and among those who did not recall the discussions, $t(73) = -1.47$, $p=.15$.

Examining just those individuals whose visits included physical activity or diet recommendations, 87% of those with physical activity recommendations recalled discussion of physical activity and 77% of those with diet recommendations recalled discussion of diet. (See Table 16)

Table 16. Recall for Discussions with Physical Activity or Diet Recommendations, N=30

	Physical activity	Diet
Correct positive	26 (86.7)	23 (76.7)
False negative	4 (13.3)	7 (23.3)

Accuracy of Recall for Those Who Received Recommendations and Recalled Discussion

In general, the patients who received diet and physical activity recommendations and who recalled some discussion of diet and physical activity were accurate in their description of the discussion that took place. They tended to overestimate the time devoted to the discussion but otherwise the descriptions conveyed the content of the discussion. There were some discrepancies in the details of the visit content - e.g., whether or not benefits were discussed or whether recommendations were provided - but these discrepancies were minor. Patients seemed less likely to report discussion of recommendations when the recommendation simply involved maintenance - that is to keep exercising or to stay active - rather than instructions to initiate or improve current activities.

Influence of Diet and Physical Activity Recommendations on Patient Motivations and Specific Plans to Change Behaviors

As part of the sociodemographic questions, patients were asked about their motivation to change their dietary and physical activity behaviors and their plans to change these behaviors within the next month. I examined the responses to these items both in the aggregate and separately based on whether or not discussion occurred, and if so, whether or not the discussion involved recommendations. Responses to these items could be considered part of the influence of the discussions, as these questions were asked following the clinical visit. Causality, however, cannot be determined, as I did not ask these questions prior to the visit. The following two tables show patients' motivations and plans immediately following the discussions that did take place (Tables 17 and 18).

Table 17. Motivations and Plans to Improve Diet				
	Not Discussed (n=34)	Discussed without Recs (n=40)	Discussed with Recs (n=30)	All patients (n=104)
<i>Motivated to improve diet</i>				
Not at all	12 (35.3)	17 (42.5)	6 (20.0)	35 (33.7)
A little	5 (14.7)	5 (12.5)	3 (10.0)	13 (12.5)
Somewhat	12 (35.3)	9 (22.5)	9 (30.0)	30 (28.9)
Very	4 (11.8)	8 (20.0)	12 (40.0)	24 (23.1)
Missing	1 (2.9)	1 (2.5)	0	2 (1.9)
<i>Plan to improve diet</i>				
Not at all	18 (52.9)	21 (52.5)	9 (30.0)	48 (46.2)
A little	5 (14.7)	3 (7.5)	1 (3.3)	9 (8.7)
Somewhat	4 (11.8)	7 (17.5)	6 (20.0)	17 (16.4)
Very	6 (17.6)	8 (20.0)	14 (46.7)	28 (26.9)
Missing	1 (2.9)	1 (2.5)	0	2 (1.9)

Table 18. Motivations and Plans to Improve Physical Activity				
	Not Discussed (n=29)	Discussed without Recs (n=45)	Discussed with Recs (n=30)	All patients (n=104)
<i>Motivated to improve physical activity</i>				
Not at all	9 (31.0)	19 (42.2)	10 (33.3)	38 (36.5)
A little	3 (10.3)	10 (22.2)	2 (6.7)	15 (14.4)
Somewhat	6 (20.7)	8 (17.8)	6 (20.0)	20 (19.2)
Very	9 (31.0)	8 (17.8)	12 (40.0)	29 (27.9)
Missing	2 (6.9)	0	0	2 (1.9)
<i>Plan to improve physical activity</i>				
Not at all	13 (44.8)	27 (60.0)	19 (63.3)	59 (56.7)
A little	2 (6.9)	2 (4.4)	0	4 (3.9)
Somewhat	3 (10.3)	10 (22.2)	4 (13.3)	17 (16.4)
Very	9 (31.0)	6 (13.3)	7 (23.3)	22 (21.2)
Missing	2 (6.9)	0	0	2 (1.9)

Participants varied in terms of their reported motivations and plans to change diet and physical activity behaviors. Approximately a third of participants responded that they did not have any motivation to make changes to their diet or to physical activity.

Nearly half of all participants had no plan for dietary changes, and just over half had no plan for physical activity changes. To explore whether discussion of diet and physical activity related to motivations and plans to change diet and physical activity, I conducted nonparametric Kruskal-Wallis tests; these tests were appropriate because there were three categorical independent variables (no discussion, discussion without recommendations, and discussion with recommendations) and an ordinal dependent variable (motivations or plans). Mann-Whitney post-hoc tests were used to understand initial significant findings.

A Kruskal-Wallis test revealed that discussion of diet significantly predicted patients' motivations to change their diet, $\chi^2(2) = 7.05, p = .029$. Mann-Whitney post-hoc tests revealed no differences in motivations to change diet between those with no discussion of diet and those with discussions without any recommendations. However, patients with dietary discussions that included recommendations reported being significantly more motivated to change their diet than patients with no dietary discussions, Mann-Whitney $U = 331.50, Z = -2.34, p = .019, r = -.30$. Similarly, patients with dietary discussions that included recommendations reported being significantly more motivated to change their diet than patients with dietary discussions without recommendations, Mann-Whitney $U = 402.00, Z = -2.31, p = .021, r = -.28$.

A Kruskal-Wallis test revealed that discussion of diet also significantly predicted patients' plans to change their diet, $\chi^2(2) = 8.27, p = .016$. Mann-Whitney post-hoc tests revealed no differences in plans to change diet between those with no discussion of diet and those with discussions without any recommendations. However, patients with dietary discussions that included recommendations reported being significantly more likely to have a plan to change their diet than patients with no dietary discussions, Mann-

Whitney Mann-Whitney $U = 318.50$, $Z = -2.58$, $p = .010$, $r = -.33$. Similarly, patients with dietary discussions that included recommendations reported being significantly more likely to have a plan to change their diet than patients with dietary discussions without recommendations, Mann-Whitney $U = 398.00$, $Z = -2.42$, $p = .016$, $r = -.29$

Kruskal-Wallis tests revealed that discussion of physical activity were not significantly related to patients' motivations to change their physical activity, $\chi^2(2) = 3.86$, $p > .05$, or to patients' plans to change their physical activity, $\chi^2(2) = 1.93$, $p > .05$.

Findings from the Patient Interviews

The semi-structured patient interviews, which took place immediately after patients completed their medical visit, were conducted with the goal of understanding what influence patients believed their provider's diet and physical activity recommendations would have on their behaviors. In order to gain this understanding, I asked patients detailed questions about their visits, with particular attention to how diet and physical activity were discussed and the perceived impact of these discussions. Part of understanding the perceived impact of diet and physical activity discussions also involved asking patients about their beliefs regarding the importance of these behaviors. While Self-Determination Theory (SDT) led me to anticipate the importance of certain constructs, line-by-line coding by both me and an experienced qualitative co-coder resulted in multiple iterations of a codebook that helped with identification of important themes from the patient interviews. (See Appendix E to view the final codebook).

Patients believed diet and physical activity were very important behaviors and demonstrated a personal awareness of the value of these behaviors. This awareness oftentimes developed through observing negative consequences in others who did not

engage in healthy diet and physical activity. Despite identifying the importance of healthy diet and physical activity, patients frequently recognized they did not practice these behaviors to the extent they should.

Patients discussed a number of factors which may help to explain this disconnect between knowledge of the importance of healthy diet and physical activity and suboptimal engagement in these behaviors. Patients explored the role of motivation, which was influenced by health concerns, anticipated benefits of behavior changes, perceptions of old age, and providers' messages regarding the perceived need for change. Varying levels of confidence - which was influenced by past experiences of attempted changes, providers alleviating concerns and providing encouragement for change, and the development of clear, specific, feasible plans - may also contribute to the disconnect between knowledge of the importance of healthy diet and physical activity and engagement in these behaviors. Patients indicated how their life context influenced their diet and physical activity practices. Finally, patients shared how strong relationships with providers shaped the provider's influence.

Physical Activity and Diet Were Highly Valued Behaviors

Patients seemed very knowledgeable about the importance of diet and physical activity in abstract terms. Most patients stated they thought diet and physical activity were very important and provided a range of explanations when I asked why they were important. In regard to diet, patients expressed that, "we are what we eat," "diet is disease therapy," "it's [diet's] everything. I think it'll keep you out of a nursing home," and that proper nutrients are required to make the body function optimally. In regard to physical activity, patients expressed how, "It keeps your circulation going, it keeps your arthritis from hurting so much, it keeps your heart in good shape, and it keeps your mind

going.” Patients also expressed the idea that physical activity is also beneficial because, “you got to keep your body going and if you don’t use it it’s going to deteriorate. It’s important for your mental health, it’s important for your physical well-being. It’s important.” Many patients talked about how staying active and eating healthy diets enable individuals to stay healthy and maintain their independence longer.

Not only were patients very knowledgeable regarding the importance of diet and physical activity in general terms, many patients applied this knowledge to their own circumstances and expressed a high degree of awareness regarding the personal importance of diet and physical activity. Some patients talked about feeling better and sleeping better with improved physical activity and diet. The value of these behaviors was also acknowledged in the context of various health conditions. For instance, a 72 year old female patient emphasized how diet was particularly important for her diabetes management,

The diet depends on how you feel too. Especially with diabetes, if you don’t eat well you feel terrible. I know because I have, I’ve been sick sometimes, and it makes you feel terrible. It has a lot to do with energy and everything, your diet, it has a lot to do with energy level and if you eat a lot of sweet things you are not supposed to, you feel terrible. I feel better if I eat right.

This patient described the value of diet in experiential terms not medical ones.

For some patients, this personal awareness regarding the importance of diet and physical activity to their own circumstances developed through seeing the negative consequences in other individuals who did not practice healthy behaviors. An 82 year old female patient indicated that,

Diet is very important for a diabetic. Without, my sugar would go up too high and it can cause you to have strokes. And my husband was a diabetic and he wasn't as careful at eating as I was and he had many of those little strokes and he finally had one stroke that paralyzed his eating [*making him unable to eat*]...

Patients also connected the importance of diet and physical activity to weight management and emphasized the value of being a healthy weight. A 70-year old female patient suggested,

People who are overweight, it can lead to all kinds of illnesses, heart problems. I had a friend who just had a stroke and she is five years younger than I am. That I think, overweight people, being overweight causes a lot more, and then you have painful joints, arthritic joints, it just can lead to all kinds of horrible thing, it really can. And you try to explain to your friends about this and they don't want to listen, so things happen.

This patient then discussed the importance of adopting a healthy diet and engaging in physical activity to avoid becoming overweight and becoming susceptible to the array of negative consequences she had identified.

Disconnect Between Awareness of the Importance of Healthy Diet and Physical Activity and Engagement in These Behaviors

Despite a high level of awareness of the importance of physical activity and healthy diet, patients frequently expressed the idea “what I’m currently doing is not what I should be doing,” and “I should be working out regularly and I know that, and I don’t do it. I tell myself that I’m going to do that [work out more regularly], but I don’t do that.” Similarly, patients expressed an awareness of the value of physical activity

alongside recognition that they are not as active as they should be: “it’s important, I know it is. I just don’t do it,” and, “I think it’s [physical activity] very important. I just need to do more of it.” The same sentiment was expressed in the context of diet: “I don’t follow it [healthy diet] as well as I should, but clearly that’s important, very,” and, “I know what to eat, it’s just not doing it...I know I need to do better than I’ve been doing.”

Motivation

Inadequate motivation may be a critical factor to help explain this gap between awareness of the value of diet and physical activity and engagement in these health behaviors. Motivation refers to one’s desire or drive to make changes (Deci & Ryan, 2000). When someone is motivated to make changes, he or she may be more likely to try to attempt changes and more likely to persevere if he or she encounters challenges. Patients expressed a variety of factors influencing their motivations to make changes in physical activity and diet. These factors included health concerns, anticipated benefits, perceptions of old age, and providers’ messages regarding the perceived need for change.

Motivation: The role of health concerns.

Patients expressed how their motivation to improve their diet and physical activity was influenced by a variety of health concerns, including new health diagnoses, worsening lab values, functional concerns, negative health experiences, and a desire to avoid medication. Since diet and physical activity are ongoing behaviors, there often needs to be some motivation to help patients move from knowledge and awareness to action. Many patients expressed how the initial receipt of a health diagnosis motivated them to improve their diet or increase their physical activity. For instance, one patient expressed, “When I first found out I had it [diabetes], I tried to work with the diet. “ For

other patients, it was not the diagnosis itself that served as a motivator, but other health factors that served as this cue to action. These factors included rising lab values – e.g., high A1C values or high cholesterol, high blood pressure, functional concerns such as breathing difficulties, or negative experiences with existing conditions. A 70 year old female patient discussed how a negative health experience, a recent diverticulitis flare up, served as her motivation to change her diet, “I had a really terrible bout with it and ended up here in the emergency room, so very motivated [to change diet]. I don’t want that to happen again. It was very painful.” Another patient, a 70 year old male with diabetes, expressed how a past negative health experience, cirrhosis of the liver, served as a motivator in the past to improve his diet and physical activity. He expressed how over time, those healthy habits faded and he speculated that worsening lab values, in this case liver tests, would renew his motivation,

At one point I weighed 360 pounds, and I had cirrhosis of the liver and so I had a liver transplant, and that was a real kick in the pants motivator. And after that I lost all that weight. For years I was in pretty good shape...I’m going to have some lab tests tomorrow, they are important lab tests, they are about my liver. If they were very bad, that would be a motivator I think that I wouldn’t turn back at.

Others who had not yet experienced negative consequences of their conditions directly expressed the possibility of how if values worsened, e.g., if blood sugars increased, then they would be motivated to make changes. For individuals with diabetes, the fear of amputation also motivated some. A 71 year old male patient with diabetes and high blood pressure shared,

Most people just eat everything, and I've been around people who said, 'I just take a pill after I eat what I'm not supposed to eat,' but I can't do that. Because once they start cutting on me, and I want to keep all of it.

This patient wanted to maintain all of his limbs and avoid reaching the point where amputation or "cutting" would ever be necessary. He recognized the role of diet in managing his conditions and avoiding decline.

Many patients expressed being motivated to improve their diet and physical activity in order to avoid medication. A 68 year old male patient expressed how the threat of needles motivated him to focus on his diet to improve his A1C level. Another 68 year old male patient explained how the threat of medication motivated him in the past, "My cholesterol was up on my blood tests and she [my doctor] said, do you want to take Lipitor or lifestyle change and I said lifestyle change. And I've done that and it got better." Similarly, a 72 year old male patient indicated, "Dr. H. threatened to put me on blood pressure medication and I said, 'I can do this myself.' So I practice the DASH diet and stuff like that."

Motivation: The role of anticipated benefit.

Patients also expressed being motivated to engage in healthier behaviors because of the anticipated benefits. Anticipated benefits included maximizing upcoming events (by being healthier or looking better), feeling better, and controlling existing conditions. Past experiences of benefit supported patients' future expectations of benefit. Past experiences where benefits were not experienced, however, undermined motivation for current behavior change efforts.

A variety of upcoming events served as motivations for individuals to engage in healthier behaviors. Patients discussed how upcoming vacations or visits with grandchildren served as motivations to increase physical activity in order to be able to keep up while with their grandchildren. One patient who spoke about being motivated to keep up with his grandchildren said, “I’ve got 11 and 14 year old grandkids that run me to death too. So you got to stay in shape to keep up with them...So I need to get some exercise to keep up with them.” A few patients mentioned social gatherings, such as reunions, as motivators for weight loss – through diet and physical activity – to look better at the upcoming event. One patient referenced an upcoming surgery as a motivator for weight loss through diet and physical activity. He felt that if he was able to lose weight before his surgery, he would be healthier and his rehabilitation would be easier.

Patients who had prior experience with the benefits of healthy diet and physical activity were motivated to improve their diet and physical activity to experience similar benefits again. For instance, a 68 year old female patient discussed how a healthy diet had helped her lose weight in the past and that she felt better with this weight loss; she reported that this personal experience of the benefit of healthy eating served as a current motivator, “I do have the motivation to do it [eat healthy] because I know I’ll feel a lot better.” These prior experiences support the knowledge that these behaviors are important, enhance awareness of personal benefits, and improve confidence that these benefits are obtainable. This concrete experience or evidence of these behaviors making a difference helped motivate patients. A 71 year old male patient expressed how he started walking to keep his sugar levels down and that he has continued to do so because his acceptable sugar levels provide evidence that his walking is having a positive impact,

“That’s [walking’s] what I’ve been doing since he told me that keeps it [the sugars] down. And I found out, you know, it does, it keeps it way down. Keeps down where it’s supposed to be at.”

Others highlighted how evidence of benefit of behavior changes could enhance patient motivation to continue efforts. Discussing the importance of physical activity, one 65 year old female patient indicated,

I think it’s beneficial. I mean, I’m 65 years old but I don’t feel 65. Well, I don’t know how 65 is supposed to feel, but I feel fine, you know, so I don’t know if this [my physical activity] is contributing to that. But if it is, I want to continue doing it.

This patient highlighted that if she knew her physical activity contributed to her feelings of well-being, she would be motivated to continue her activity. The reverse was also true; a lack of noticeable or desired benefits sometimes led patients to cease prior efforts. A 68 year old male patient explained:

I had the prostatectomy, this is 2010, and then in April or August it was detectable again and I thought, ok, I got to start exercising...So I started walking four times a day, very fast, as fast as I could walk. I did that at least six days a week until the end of October, 27th I think, when my radiation started. And the PSA [*prostate specific antigen*] kept going up. So the exercise I couldn’t see was doing anything. Probably getting me in better shape, certainly, doing that, but it didn’t have that effect, and that was kind of dispiriting. So I stopped doing the walking...and I didn’t go back to walking because I didn’t have the same belief in it.

This patient had increased his physical activity with an anticipated benefit - a stable PSA value - in mind. While exercise can reduce the risk of prostate cancer, it does not seem to have a significant impact on PSA levels (Tymchuk, Tessler, Aronson, & Barnard, 1998). When the hoped for reduction in PSA levels was not realized, this patient's motivation to remain active was no longer present. Similarly, a 71 year old female patient reported how her past dieting attempts did not result in the weight loss she desired, and in fact seemed to lead to weight gain instead, which discouraged her from any future dieting attempts, "They have put me on diets and I gain weight...And so I'm not a dieter... I gained more weight on the diet...And some days I don't change my diet and I come here and I've lost [weight]."

Motivation: The role of perceptions of old age.

Another factor which seemed to influence motivation was perceptions of aging and old age. For many individuals, low expectations for old age seemed to undermine motivation for efforts to improve diet and physical activity. With poor expectations for the future, and meager visions of what it would mean to be healthy at one's current age, the potential to perceive benefits in behavior change was limited. Accordingly, when patients thought they were doing well for their age and when they had poor visions of old age where they were unable to envision improvements, patients were unmotivated to make diet or physical activity changes.

A number of patients indicated how they thought they were doing well for their age and expressed that they had no need to make changes. One 88 year old woman expressed how she thought her overall health was poor, but that for someone her age her health was probably fine. By normalizing her problems, she did not perceive a need to

actively address them. Many mirrored this sentiment, suggesting “I can’t complain for my age” or “as old as I am, I’m in pretty good health.” One 83 year old indicated she perceived herself as active, despite only being able to be active for approximately ten minutes at a time, suggesting that, “I do about as much as I guess any average 83 year old would do.” Others expressed that simply surviving until their age suggested they were doing fine. An 84 year old male suggested, “I’m still around so I guess I’m doing a lot better [than others my age].” An 85 year old male similarly indicated, “I think I’m doing wonderful just to be out of bed. I think it’s good.” He went on to say how many his age are dead or in the hospital and unable to do anything at all, so in comparison, he felt he was doing very well. One 82 year old woman expressed that despite some health limitations, “I’m almost 83. So I’m just doing something right.” While recognizing the potential for improving her health behaviors, she discounted the need to do so due to her health success of reaching old age.

As many of the patients’ statements indicated, social comparison with others one’s own age strengthened the impression of “doing well for one’s age.” One 65 year old male indicated, “I come here and see how other people are doing and realize I’m not doing too bad. I’m still up and moving and doing. I may be hurting and in pain, but I see people in crutches and wheelchairs and stretchers and think that I’m not doing too bad.” A 65 year old female expressed, “compared to some of my classmates I’m doing great.” This ability to view oneself as doing better than others one’s age may be positive for mental health, but may reduce individuals’ motivations to improve their health behaviors.

By normalizing conditions or symptoms as part of old age, patients, and their providers, may have missed opportunities to discuss issues that could be addressed through diet and physical activity. For instance, when asked about his chronic

conditions, a 76 year old male discounted his high blood pressure because, “everybody has that.” Similarly, a 72 year old male discounted his fatigue concerns, accepting that they were just a part of age. A 76 year old female expressed, “I probably weigh more now than I ever have in my life. And part of it is just getting old.” Similarly, a 65 year old male attributed his unhealthy diet to age-based cultural tendencies, suggesting, “you know, old folks like me, we have meat at every meal.” While recognizing room for improvement in his diet, he recused himself of the need to make changes by suggesting his unhealthy eating patterns are just part of being old.

Motivation: The provider’s role in the patient’s perceived need for improved diet and physical activity.

Patients expressed how their providers’ limited discussion of diet and physical activity contributed to a lack of perceived need for behavior change. Many patients who reported their provider did not offer any diet or physical activity recommendations indicated that the implicit message they received was that, “I think she [my provider] thinks I’m doing ok” and to just “keep on doing what I am doing.” Patients reported that diet and physical activity discussions often seemed to take place for the provider’s records, not for the benefit of the patient. Patients perceived these discussions as part of what providers are supposed to ask and record and expressed that the content was often covered in a checklist-type fashion. One patient replied to my question about health behavior discussions in her visit, “I wouldn’t say we discussed it, but she asked me and I answered.” Similarly, when I asked a 69 year old male patient if the dietary conversation related to any concern relating to his health or well-being he replied, “No, I guess that was just for his records...I think these are just general questions that doctors ask their

patients.” The lack of engaging discussion or provision of advice was perceived by patients as an indicator that there was no need to make any changes.

Confidence

Confidence is another factor which may help to explain the disconnect between awareness of the benefits of healthy diet and physical activity and engagement in those behaviors. Confidence refers to an individual’s sense of efficacy in his or her ability to make changes and effect outcomes (Harter, 1978). Thus, confidence encompasses notions of self-efficacy and response efficacy. When an individual is confident in his or her ability to make effective changes, he or she may be more likely to attempt to change their behavior. If they lack the confidence to make changes, they may feel it is not worth the effort to even attempt to modify their behavior. Knowledge is a critical component of confidence – knowing how to make changes enables individuals to feel they are capable of change. Patients varied in their confidence in the ability to improve their diet and physical activity behaviors and expressed a number of different factors influencing their confidence levels. These factors included success of prior attempts, provider’s alleviation of concerns and encouragement of efforts, and discussion of feasible, actionable plans for change.

Confidence: Past success encourages future attempts.

Just as past behavior change successes motivate future behavior change efforts, past efforts to make physical activity and dietary changes also influenced individual’s current confidence regarding their ability to make changes. Those who had a history of engaging in healthy diets or significant physical activity and reported success with past attempts to improve these behaviors were often more confident in their ability to return to

healthy behaviors. For instance, a 68 year old female patient reported, “I know I can [improve my diet] because I’ve done it before.” A 67 year old female patient discussed how her past lifestyle change successes, combined with her recent retirement, provide her with the confidence and the opportunity to engage in healthier behaviors,

I thought ok, I can do it [control diabetes with diet/exercise], I did it before. I wasn’t active. I was school librarian for 20 years. I worked in Georgetown and by the time I got home I just wanted to curl up and help fix dinner and do that.

But I have no excuse now. I’m retired with not a thing to do yet.

Those who had past experiences where they actively enjoyed being engaged in healthy behaviors were also more confident in their ability to make changes.

Conversely, those who had tried to make changes in the past and were unsuccessful or who had successfully made changes but felt that those changes did not have much impact, reported being less confident in their ability to make changes. One 65 year old male patient expressed feeling that diet is important but that improving it is “almost impossible.” He shared how he had tried to change his diet in the past and just felt hungry all the time. While he was unable to remember the specifics of what dietary changes he had attempted, his sense of inability lingered. A 75 year old female patient also expressed how her low confidence level stemmed from past failures with diet attempts:

You know, I’m not confident about that [ability to change my diet] at all.

Because I just, I just have tried dieting, and I just do not stick with it. I can do good for two or three days, and then everything that is not nailed down is open territory. You know, I’m not very good at dieting.

A few patients talked about feeling discouraged from physical therapy given past difficulties keeping up with suggested exercises.

Patients were often uncertain regarding their ability to make changes when they had not received any feedback regarding the impact of past efforts. For instance, an 83 year old female patient expressed how in the past, to address her fluid retention, she had been instructed to limit her fluid intake by using a two-liter bottle to monitor her consumption. She indicated that she “tried that time for a while. I guess it worked. Nobody ever said anything. Then I started drinking my water again.” She had tried to follow her provider’s recommendation, may have even been successful in doing so, and suspected that by following the recommendations she may have even effectively decreased her fluid consumption. However, her provider never confirmed if her efforts were making a difference, and with no definitive indicator of whether her efforts were fruitful, she ceased following the instructions and was uncertain regarding her ability to make future changes to her diet.

Conversely, having some indication that past efforts were effective increased individuals’ confidence with current efforts. A 71 year old male patient expressed how he was confident his current efforts to improve his physical activity were working because his blood glucose levels were under control with his recent walking, negating the need to give himself an injection. A 68 year old male patient explained, “I experiment a lot with my health and see what works, if I have a way of gaging it, measuring it.” He explained how he used his A1C levels to gage the success of his dietary changes and felt that he could make changes if he wanted to because he knew that the changes work.

Confidence: Providers' role – alleviating concerns and encouraging change.

Patients reported that providers were able to influence their confidence in their ability to make health behavior changes by alleviating health concerns that may serve as potential barriers to change. Some patients felt unable to make changes because they believed their health conditions precluded their ability to make changes. For some of these individuals, however, these conditions should not have prevented them from increasing their activity or improving their diet and may in fact actually benefit from these changes. For instance, a 79 year old female patient mentioned how her shoulder had been hurting and that she did not think she should be physically active, given the pain she was experiencing. She reported sharing with her provider that she thought it would get better by not using it as much, and that her provider corrected her, suggesting that she should use it and that it might actually get worse if she did not. In this case, the provider was able to alleviate the patient's concern, increasing the patient's confidence in her ability to be physically active.

Another patient, a 65 year old male, expressed how his provider was able to confirm that he did not have pneumonia and that it was therefore safe to exercise, "There's nothing stopping me I know from going ahead and pushing harder. I know that from this visit, so that helps." He discussed how he recently had not been active because he was not sure if he was healthy enough to engage in physical activity. With the knowledge that he was better, however, he felt confident about his ability to improve his physical activity. Others without this reassurance suggested that their health conditions or status prevented them from making changes; without being explicitly discussed with their

providers, it is unclear whether these concerns could have been alleviated or whether they were true barriers.

Even when providers were not directly alleviating concerns, patients reported that general encouragement also served to enhance their confidence to make changes or to continue with current efforts. A 65 year old male patient reported, “With their encouragement and their agreement with my plan, it gives me the ability to move forward with confidence.” A 71 year old male patient indicated, “I do a lot of reading on this, and part of this is getting reassurance from them that I’m doing the appropriate thing. And I did get good reassurance.” This patient went on to explain that the discussion with his provider will influence him because, “it just gives me assurance that I’m doing the right thing.” A 75 year old female patient also expressed, “any support they give makes you more confident that I should do that.” Another patient explained how her provider’s support influenced her, that encouragement is what she needed since she already had the knowledge.

Confidence: Feasible, actionable plans promote confidence to change behaviors.

Patients indicated feeling more confident in their ability to make changes when they had feasible, clear, specific plans for change. Plans seemed more feasible when the changes required seemed relatively small, were not perceived to be too strict or limited, and could be made gradually. Plans for diet and physical activity changes were considered clear, specific, and feasible when the next steps for change were identified. As patients developed a clear vision for change and their confidence in their ability to make changes increased, their motivation to make changes also seemed to increase.

Patients felt more confident about making health behavior changes when these changes seemed feasible. An 80 year old female patient expressed her confidence that she could make changes in her physical activity because she felt that there were at least small things she could begin doing, “I could some. Because I could start out. There’s no such thing as not being able to unless you are totally disabled, which I am not.” A 70 year old male patient indicated how he could make gradual changes, “I certainly can’t sprint anymore, but if you were to say, going from the mild, to what did you call it, moderate, I’m sure I could do that without any problems.” A 67 year old female patient expressed how her confidence to make dietary changes was greater because she realized she did not have to follow a specific diet precisely, “I mean I’m not following South Beach properly, but I am making a lifestyle change.” Other patients expressed low levels of confidence to make dietary changes when they felt the required change would be too strict or limiting for them to be able to follow successfully.

Sometimes, these perceptions that changes would be too difficult stemmed from a lack of discussion regarding what steps would be necessary. Many patients reported discussing weight loss goals during their visits, but indicated that these discussions did not always occur in conjunction with plans for how to achieve these goals. Without clear plans they may have a goal of change, but lack the confidence to make any changes. When I asked one patient about whether she had discussed diet with her provider she replied, “Not really. That doesn’t mean that I don’t mention wanting to lose ten pounds, but I don’t get nutritional information.” Without this information regarding how to achieve her weight loss goal, she remained motivated to make changes, but lacked actionable dietary knowledge that would give her the confidence to move ahead.

Often, even when plans were discussed, they were often somewhat vague, with patients being told to “watch what they eat,” “watch their diet,” “work on diet and exercise,” invest “a little bit of extra effort into the lifestyle” with no more in depth discussion. These broad recommendations without specific actionable suggestions left some patients uncertain how to proceed. One 83 year old female patient reported that she and her providers had never discussed diet before, “I’ve mentioned diets before to them, but they never did tell me what I could do to lose weight.” This patient was trying to convey that while she and her providers had briefly discussed diet, they had never discussed it in the depth she felt necessary to give her the knowledge about how to make changes that could result in her desired goal of weight loss. For many patients knowledge or information from their providers seemed to be a necessary predecessor of confidence; without guidance from their providers they lacked the specific, actionable knowledge of how to make changes and consequently also lacked the confidence to make changes. A 68 year old male patient reported a goal of bringing down his A1C:

I achieve those goals with diet and exercise and drugs. And I, there are some specific things that I could do with drugs, and we talked about those. And there are things that I do with the diet and with the exercise that I will have to figure out how to accomplish. And they are fairly concrete, I just don’t know yet what they will be.

This patient suggested that the next steps for drugs were clearly discussed, but the next steps for diet and exercise were left more ambiguous. While he conveyed a general sense of confidence that he would ultimately figure out how to improve his diet and exercise, he lacked the confidence to make more immediate changes because he currently lacked

the knowledge of what changes were appropriate. Without a plan, even patients with high levels of motivation may not make any changes. This patient believed he would figure out how to proceed, but acknowledged that at present, without having discussed a specific plan for implementing diet and physical activity changes, he did not know how to proceed. When I asked one 65 year old male patient who reported being very motivated to make changes what kind of changes he hoped to make, his reply was, “I have no idea”; without any ideas for implementation, his knowledge of how to make changes, and therefore his confidence to make changes, was not very high.

The Role of Patient Life Context on Behavior Change: How Factors External to the Visit Shape Patient Behavior

While the goal of the patient interview was to understand the influence of providers’ diet and physical activity recommendations on patients’ behaviors, patients also discussed a number of other factors that influence their engagement in these behaviors, including finances, family members, convenience, and their environment. Patients’ discussion of these factors helps to situate the role of the provider; the provider is one potential influence on patient behavior but functions within the patient’s broader life context. Patients do not exist in a biomedical vacuum; patients’ real and perceived ability to make changes depend on the resources available to them and the environments in which they live. Some factors impact patients’ behaviors directly; other factors influence behavior indirectly by modifying patient motivation, confidence, or ability to make behavior change. These factors may be fairly static, or at least outside of the providers’ control, but with an awareness of these factors, providers can leverage patients’ assets for making changes (e.g., can draw on family supports) and problem

solve factors that may serve as constraints or barriers to change (e.g., facilitating access to facilities or identifying resources for change). While providers could incorporate these factors into their diet and physical activity discussions, patients described these factors as external influences on their behavior that were distinct from their providers' impact. Given that the goal of this research is to understand how provider discussions influence patient engagement in these behaviors, these other factors will be discussed only briefly to demonstrate some of the challenges and opportunities that patients' life circumstances can provide for making health behavior changes. While this is not an exhaustive list of external factors impacting patients' health behavior choices, finances, family members, convenience, and their environment were the factors that patients most frequently described.

Finances.

Engaging in a healthy diet and pursuing opportunities for structured physical activity can both be costlier options than the less healthy alternatives. Patients with limited financial resources may view cost as a barrier to making healthy behavior changes. One 72 year old female patient who reported having just enough money to get by explained how diabetes is costly and that buying healthy foods can be a challenge with a limited income. Similarly, patients expressed how finances made physical activity more challenging, making access to exercise facilities difficult. Finances also intersected with the role of insurance; some patients were only willing to initiate physical therapy if insurance would cover it.

Family.

Family members were also reported to impact patients' physical activity and diet behaviors. Some patients discussed how other individuals make their meals for them, influencing their ability to make dietary changes. Others expressed how they were already changing the foods they eat to meet family members' dietary goals or dietary restrictions. For instance, a married 73 year old female patient expressed, "I don't put salt on my food once I sit down and I use very little salt in cooking because I need to watch that too for my husband, he has problems with blood pressure." A few patients also mentioned having vegetables on hand because of family members who enjoyed them, or, the reverse, that they tended not to have many vegetables because they live alone and thought that fresh produce would go bad before they would have a chance to consume it. Family members were particularly influential in healthy eating efforts at times of the year when there were social gatherings that might involve the patient being surrounded by unhealthy foods. Patients frequently talked about upcoming holidays as challenges to their ability to improve their diet, suggesting that they might postpone dietary change attempts to after the holidays when they could be more successful. In the context of physical activity, a few patients spoke about how they may be more successful going to the gym because they have family members who have been encouraging them to join them. One patient indicated that her husband needed rehabilitation so she was going to go to the gym with him. Other patients talked about being more likely to be active when they had someone to join them, "I do better if someone will walk with me than I do by myself."

While family members occasionally contributed to discussions of diet and physical activity, and both patients and family members mentioned that family members impact patients' health behaviors, providers' diet and physical activity recommendations did not reference family members. One provider acknowledged that family members provided the patient with good dietary information and one provider involved a family member with a weight surveillance recommendation, but providers did not acknowledge the behavioral influence or include family members in their diet or physical activity suggestions. Since providers did not draw upon these family members as resources, the influence of family remained distinct from the influence of the provider.

Convenient options.

While some patients talked about healthy diets being easier when they had vegetables on hand or more challenging when they were "on the go," the role of convenience mostly focused on physical activity. Patients reported being more likely to exercise if they had facilities nearby that they would want to utilize, for instance, health clubs with pools that would allow them to engage in water aerobics so they could be active without putting weight on their knees. One patient talked about appreciating the stretching exercises he does due to their convenience factor, "I can do them at home so I don't need to go anywhere to do them, plus I don't need any special equipment or anything." Others talked about having trouble being active because they lacked convenient options. For instance, a few individuals expressed an interest in swimming but indicated they did not have a facility nearby. One patient who used to be a runner until he had an injury indicated, "I miss the running. A lot. It's just anything else I do is something where you got to go somewhere to do it kind of thing. So it's going to be

tough to do that.” He went on to discuss how he wants to find something that fits within his schedule, where he can incorporate physical activity into his life without having to quit working to create the time.

Environment.

The environment, referring to both weather and perceived safety, also played a role in patients’ perceived ability to make changes to their behaviors. A number of patients talked about their physical activity primarily consisting of walking and thus being dependent on the weather. Weather also impacted diet for some individuals who mentioned gardening as a source of fresh fruits and vegetables. Some patients reported lower levels of confidence regarding the ability to increase their activity due to feeling unsafe walking in their neighborhood.

Relatedness: Satisfaction with Providers and the Influence of Strong Relationships

Relatedness refers to patients’ feelings of connection with their providers. Presumably, patients who have stronger connections with their provider and place more trust in their provider will be more likely to listen to their provider’s recommendations (Deci & Ryan, 2000). I found that patients were overwhelmingly satisfied with their relationships with their providers and perceived these strong relationships to influence their desire to follow provider recommendations. However, they also expressed how strong relationships with their provider created greater familiarity with the patient’s health behaviors, sometimes decreasing the likelihood diet and physical activity would be discussed.

Regarding patients’ high level of satisfaction with their providers, patients expressed trusting their providers, feeling comfortable with them, and feeling supported

by them. Patients appreciated their provider's attentiveness and responsiveness. Some patients also commented on finding their providers pleasant and efficient. Some attributed their positive feelings about their providers to the duration of seeing their provider and feeling that the provider now knows them well. Patients also reported appreciating feeling that their provider was looking out for them. When asked why he chose his current doctor, one patient reported:

She's got the attitude, she's got the spunk. I want somebody who'll talk back at me. I think it's better for your health, mental and physical if you can keep the blood pumping, if you can keep going. Somebody that won't talk to you, that's not for me. I like somebody that will argue, talk to you, fuss at you, kind of a big sister or something, somebody that'll keep it going and she does that.

Patients occasionally shared negative perceptions of prior providers, but typically did so in the context of satisfaction with a current provider. An 80 year old male patient expressed how he appreciates that his current doctor takes his time and does not rush him like other providers had in the past, "Dr. C. is a good guy...One of the things I like about him is he loves to talk, tell jokes. Whereas many guys just keep, they are wound up, 'any problems with shortness of breath? No? Sounds good.'" Another patient discussed appreciating his current provider because she does not exhibit the same negative age stereotypes that his previous provider had:

The one I had before, we just didn't hit it off right from the very beginning. And he always used to say, 'someone your age' and 'we have to do this because people your age' and I just found that offensive. So we kind of bumped heads from the beginning.

Other patients also indicated having negative experiences with past providers due to their attitudes towards older adults and appreciating current providers for not expressing these sentiments. One 71 year old female patient explained, “It’s terrible. You know, when a doctor looks at you and says, ‘what do you expect at your age?’ you just want to stand up and smack them, because your age has got absolutely nothing to do with it.”

Patients expressed how strong relationships with their current provider influenced their desire to follow the provider’s recommendations. One patient indicated, “I really trust Dr. T. I like him a lot. I’m more likely to follow what he says than any other doctor. He is a pretty good guy.” Trust in a provider’s advice also increased the desire to listen; one patient talked about how he started walking after his doctor suggested it would help his diabetes. When asked about this influence he responded, “If you don’t do what the doctor says, how do you expect to get better?” Others similarly emphasized how important their provider was to their health and wellbeing:

And the older you get, the more you understand, that you have to look after yourself, there ain’t no pill...But you get older, and your quality of life depends on how well you’re looked after and how much your doctor listens.

While patients viewed strong senses of familiarity with their provider as a positive, patients also speculated that diet and physical activity often were not discussed because the provider was already familiar with the patient’s behavior. One 69 year old male explained why he felt no specific recommendations for lifestyle changes were discussed, suggesting that his providers “know I know how to do it so they know my plan.” He went on to explain that the benefits of physical activity were also not addressed, which he attributed to his providers knowing he is fairly knowledgeable about

health. Others, such as a 70 year old female patient with diabetes echoed this sentiment, “they know I know what to do.” Similarly, when asked why diet was not discussed in depth a 71 year old female patient replied, “I think he thinks I get it”.

Patients believe that because their providers are familiar with their activities, providers would discuss these behaviors if they had any concerns. A 70 year old male patient indicated that his physician knows him very well. When I asked this patient if his physician discussed diet or physical activity he responded, “I think formally the answer is probably no [we did not discuss diet or physical activity], but in fact, if there were an issue, you could bet that they would bring it up. So it’s a familiarity thing.” When providers choose not to have this discussion, patients, such as the one I just quoted, sometimes perceive the absence of diet and physical activity discussion as implicit approval for their current diet and physical activity. Unfortunately, approval of a patient’s current behaviors is only one of many potential reasons a provider may not discuss diet or physical activity in a given visit; the absence of this discussion is not always intended as approval for their patient’s current activities.

Summary

These findings indicate that discussion of diet and physical activity take place in the majority of older adults’ healthcare visits. When these discussions occur, they last for an average of a minute and a half and often are patient-initiated and occur in the context of symptoms, existing conditions, and checklists of questions providers ask without any connection to patients’ health status or concerns. Additional details about these discussions were also reported, including the frequency and nature of diet and physical activity recommendations. Discussions of diet and physical activity were recalled by patients 57% and 79% of the time, respectively. Patients reported high levels of

knowledge of and appreciation for the importance of healthy diet and physical activity, but did not necessarily adhere to recommended lifestyle behaviors. Regarding the influence of the discussions of diet and physical activity, patients discussed the role of motivation/autonomy, competence/self-efficacy, relatedness, and their life-context in their health behavior decisions. In the next chapter I will discuss how these findings contribute to existing knowledge. I will acknowledge this study's limitations and explore the implications of this study's findings for providers and for the healthcare system.

Chapter 6: Discussion

In this dissertation I have attempted to understand whether and how providers discuss diet and physical activity with older patients and how patients perceive and are potentially influenced by these discussions. I divided this question into two specific aims: (1) to identify whether and how providers discuss diet and physical activity with their older patients and (2) to explore patient perceptions of whether and how these recommendations influence engagement in health behaviors. Previously, researchers had explored the frequency of diet and physical activity discussions in the primary care setting, but I was unable to identify any studies that provided these estimates specific to the older adult population. Further, our existing understanding of the nature of these discussions and the influence of health care providers' diet and physical recommendations on patients' actual behavior was very limited. I designed this study to fill these gaps in our understanding of the frequency, nature, and impact of health behavior recommendations with older adults in primary care.

Knowledge Gained in Regard to Specific Aim 1

Existing research conducted among a general adult population, not specific to older adults, suggests that less than one quarter of all medical visits involve diet and physical activity discussions. Anis and colleagues (2004) observed diet and physical activity discussions in 25% and 20% of adults' primary care visits, respectively. Flocke and Stange (2004) found that diet and physical activity are discussed in 21% and 23% of adults' family medicine visits, respectively. My research findings suggest that diet and physical activity discussions with older adult primary care patients occur much more frequently than 25% of the time; diet and physical activity were discussed in 67% and 72% of older adults' primary care visits, respectively. Note, neither my current research

nor the previous research I cited evaluate whether or not diet and physical activity discussions occurred with the nurses involved during the intake process.

Several methodological differences between existing research and my approach may account for the nearly three-fold greater rate of diet and physical activity discussion in my research. To explore these potential explanations for the discrepancy, I examine both how diet and physical activity discussion were defined and the approach employed for identifying this discussion. In terms of how discussion of these behaviors was defined, Anis and colleagues (2004) may have been slightly more selective in their identification of diet and physical activity discussions. While they used a rather inclusive definition of diet and physical activity discussion - i.e., “any discussion between the physician and the patient on dietary habits and exercise” (p.199) - the researchers did not operationalize their use of the term “exercise.” It seems plausible that they considered behaviors “exercise” only when they were structured and planned and did not include the full range of behaviors, including unstructured activities, that I considered part of physical activity. Flocke and Stange (2004) indicated that a “checklist was used to document the provision of health behavior advice” which included exercise and diet (p. 344). The pair did not specify how they operationalized “advice.” If advice refers only to discussions of diet and physical activity that include recommendations, then the present study would have observed discussion of diet and physical activity advice in 29% of visits – making the estimates closer, but still higher in the current research.

Regarding the approach used for identifying diet and physical activity discussion, both sets of researchers - Anis et al. (2004) and Flocke and Stange (2004) - utilized a direct observation approach for identification of discussion; their direct observation

approach differed notably from the approach I used in the current research. Anis et al. (2004) instructed medical student observers present during the visit to indicate on notecards when discussion took place. Flocke and Stange (2004) trained research nurses present during the visit to utilize checklists to indicate when discussions took place. These direct observation approaches may be less sensitive to identification of diet and physical activity discussions than audio-recordings as they permit only a single opportunity to recognize discussion whereas I reviewed the audio-recordings multiple times to assure I did not overlook any discussion.

True age differences and variations in visit length between my research and existing research offer additional potential explanations for the higher rates of diet and physical activity discussion I observed. Since the visits lasted longer in the current research - an average of 26.6 minutes as compared to an average of 13 minutes found in prior research (Flocke et al., 2009) - patients and providers may have had more time to discuss diet and physical activity. Prior research supports the possibility that visit length explains the discrepancy (Robinson & Roter, 1999). Kraschnewski et al. (2013) found that visits of 15-19 minutes had 1.6 times the odds of including weight-related counseling (defined as counseling regarding weight, diet, or exercise) and visits of 20 minutes or more had 2.1 times the odds of including weight-related counseling compared to visits of less than 15 minutes. Another possibility is that cultural norms have shifted such that discussions regarding diet and physical activity may be viewed as more appropriate today than they were in 2004. Regardless of the reason for the discrepancy between the frequency of counseling in previous research and the present study, the current research

suggests that discussions of diet and physical activity with older adults in primary care may occur much more frequently than suggested by prior research.

To fully address specific aim 1 I also wanted to understand how diet and physical activity are discussed; I wanted to know about the nature of these discussions not just whether or not discussions of diet and physical activity occurred. Previous research only explored the nature of these discussions to a very limited extent, reporting on the duration of the discussions, the context of these discussions, and who initiated the discussions.

Regarding the duration of these discussions, Stange et al. (2002) reported that for visits with discussion of diet and physical activity, discussion devoted to these subjects lasted an average of 1.35 minutes. In comparison, the current research found slightly longer average discussion durations for both diet (1.53 minutes) and physical activity (1.50 minutes). Stange et al. (2002) characterized these discussions as instances of “asking the patient to change behavior in order to promote health” (p.321). The somewhat lower time estimate provided by these researchers may reflect a more restrictive definition of what counts towards this discussion –e.g., only discussion involving the provider suggesting behavior change.

Exploring the context - or proceeding/transitioning topic - of diet and physical activity discussions, prior researchers indicated that these behaviors often came up in the context of related signs or symptoms (Cooper, Goodwin, & Stange, 2001). Flocke, Kelly, and Highland (2009) reported that these discussions occurred most frequently in the context of structured routines/checklists or in relation to symptoms or conditions. In the current research I also found that symptoms, existing conditions (and associated lab values), and checklists (lists of questions the provider went through to provide an

overview of the patient's behaviors but were not in relation to the patient's health status) were the most common contexts for these health behavior discussions. In terms of who initiates the discussion, Anis and colleagues (2004) reported that 61% of diet and physical activity discussions were physician initiated. The current research found that only 39% of diet and 47% of physical activity discussions were physician initiated. Previous research suggests that more educated patients participate more actively in their medical visits (Kaplan, Gandek, Sheldon, Rogers, & Ware, 1995; Street, Gordon, Ward, Krupat, & Kravitz, 2005). Accordingly, this lower rate of physician initiation of these topics may reflect the high educational level of the participants in my research.

In order to address specific aim 1 and obtain a more thorough understanding of how diet and physical activity were discussed, I wanted to go beyond the previously examined dimensions of diet and physical activity recommendations. Accordingly, by engaging in qualitative content analysis, enabling me to adjust my analytic framework as needed to capture features of the diet and physical activity communication I may not have anticipated, my research provides a much more thorough description of the nature of these discussions. I explored patients' involvement in terms of their question asking, information provision about their current health behaviors (as well as the context in which they provided information about their behaviors), and self-assessment regarding the need for change. I explored providers' involvement in terms of their question asking, encouragement of patient behaviors, and discussion of benefits. I also examined the frequency of diet and physical activity recommendations and some details about those recommendations (e.g., whether they were broad or specific, the duration of the discussions, and the relative speaker contribution of the patient versus the provider).

These features of patient-provider communication about diet and physical activity do not seem to have been evaluated in prior research –these findings represent part of the unique contribution of my current research.

Previous research examining patient question asking in primary care visits, but not particularly in the context of diet and physical activity, has suggested that patients, particularly those of lower health literacy, are often reluctant to ask questions of their providers (Katz, Jacobson, Veledar, & Kripalani, 2007). Consistent with this prior research, I found that patients rarely ask questions pertaining to diet or physical activity. Despite rarely asking questions, patients frequently provided information about their current behaviors both in response to questions and unprompted. Providers asked questions relating to physical activity in approximately two thirds of discussions and questions relating to diet in roughly half of discussions. In nearly a quarter of visits with health behavior discussions patients provided some sort of self-assessment that included recognition of the need to improve their diet or physical activity. Providers offered encouragement for current health behaviors in roughly half of all discussions regarding diet or physical activity. Prior research suggests that encouragement and support increase the likelihood of adhering to dietary changes and weight loss behaviors (Delamater, 2006). Discussions included the benefits of physical activity in just over a third of physical activity discussions and the benefits of diet in just over half of diet discussions.

Since the second specific aim focuses on the influence of these recommendations on patients, I also explored how frequently recommendations took place and some details regarding the nature of these recommendations. Discussions of physical activity and diet involved recommendations for these behaviors 40% and 43% of the time, respectively.

The majority of these recommendations involved specific recommendations. The visits with recommendations lasted approximately one minute longer, on average, than those visits without recommendations, though the range of time devoted to these discussions varied considerably. Exploring their relative contribution to the discussions of diet and physical activity, providers contributed roughly half of the words in behavioral discussions that involved recommendations and just over a third of the words in behavioral discussions that did not involve recommendations.

Knowledge Gained in Regard to Specific Aim 2

Recall represents one measure of the influence of provider lifestyle counseling. I begin this section by comparing the rates of recall observed in the current study with prior research and speculate on explanations for these different rates. I then focus my discussion on reasons individuals who received recommendations may have failed to recall any discussion of diet or physical activity.

Identifying and exploring differences in recall rates between the present and existing research.

Patients in the current study recalled a greater percentage of discussions of diet and physical activity than patients in existing research. In the current research, patients recalled 57% of diet discussions and 79% of physical activity discussions, regardless of the inclusion of recommendations. When limited just to those who had received recommendations, recall rose to 77% for diet and 87% for physical activity. Flocke and Stange (2004) reported that patients' recalled 44% of diet discussions and 43% of physical activity discussions.

One potential explanation for the discrepancy between the patient recall rates of diet and physical activity discussions that Flocke and Stange (2004) reported and those found in the current research may be the method of asking patients about recall. Twenty-four percent of Flocke and Stange (2004)'s respondents completed patient exit questionnaires immediately post-visit while still at the office, 21% mailed the initial survey back, and 55% mailed back a reminder survey sent to the patient within a month of their visit. While intuitively it seems recall immediately post-visit would be much stronger than recall one month later, Flocke and Stange (2004) reported that delays in survey completion did not relate to recall of diet or exercise discussions. I considered whether the mode (oral versus written) of recall might influence the recall rates, but current research suggests there are no significant differences in recall based on mode of assessment (Putnam & Roediger, 2013). Alternatively, the slightly longer average duration of these discussions in the current research may help explain why they were more likely to be recalled, as prior research has suggested that advice of longer duration is more likely to be recalled (Flocke & Stange, 2004).

Plausible explanations why recommendations in the current research were not recalled.

To identify possible reasons 13.3% of patients with physical activity recommendations and 23.3% of patients with diet recommendations did not recall any discussion of these behaviors, I re-examined the content of the discussions that took place in these instances. Since individuals cannot be asked about discussions they do not remember, this exploration is speculative. I found that discussions of longer duration were more likely to be recalled than discussions of shorter duration; more nuanced

statistical explorations regarding features of the discussion or characteristics of the patient that might help distinguish instances when patients do not recall behavioral recommendations would require a larger sample. Accordingly, I relied on my in-depth review and critical examination of these visits, in conjunction with the information I had about these patients, to understand these failures to recall discussions that had taken place.

The most plausible explanations for the reasons diet and physical activity recommendations were not recalled included the recommendation involved maintenance (e.g., continue with current behaviors) and not new information, the recommendation was not considered as part of the behavior, the recommendation was too brief/minimal/delivered in a rushed manner, and mild patient comprehension/memory challenges (possibly due to the co-occurrence of a spouse's visit). I discuss each of these potential explanations for failure to recall diet and physical activity recommendations briefly. I then explore the implications for provider counseling of these plausible explanations of patients' failure to recall diet and physical activity counseling.

For patients already engaging in the recommended behavior, the absence of new information may have led to a failure to recall discussions. For instance, one 80 year old female patient who informally within her visit attributed her good health to the fact that she worked out also discussed physical activity in the context of knee trouble while going upstairs at a recent football game. First, the medical resident stressed that continued exercise is the best thing she can do. Later, the attending physician provided encouragement for the patient's current behaviors, "I would recommend you stay as active as you are and exercise. The arthritis that you have is because of general wear and

tear, but if you stop exercising it gets much worse. So continue the moderate exercise.” The discussion was explicit, repeated, and specifically addressed the patient’s functional concern. The most likely explanation for why this patient did not recall discussion of physical activity was that she discounted the discussion because she already engaged in the recommended behavior. The same explanation seemed plausible in the context for diet, where individuals were instructed to continue with dietary habits they already practiced (e.g. drinking certain amounts of water or drinking at certain times).

A number of the discussions included content that I considered as part of the specified behavior (diet or physical activity), but that the patient may not have viewed as part of diet or physical activity. For instance, for a few patients discussion of diet focused entirely on fluid consumption. I considered fluid consumption as part of diet, but patients may have conceptualized diet to only focus on food and therefore may not have considered fluid consumption when they were asked if they discussed diet in their visit. The potential to overlook water/hydration when considering diet is consistent with prior research (Kleiner, 1999). In the context of physical activity, discussion of low levels of physical activity may not have been considered by patients as part of physical activity. For instance, a 74 year old female who reported being in poor health shared that she experienced trouble walking and feelings of weakness in her leg. Her provider suggested rehabilitation to help with her walking. It seems possible that she considered her walking ability so impaired that it did not meet her threshold of physical activity. Previous research suggests that questionnaires are often poor at capturing low intensities of physical activity – in part because many low-intensity activities are not consciously considered as part of physical activity (Shephard, 2003)

Minimal or brief conversations may have also led to patients' failure to recall diet and physical activity recommendations. For instance, one 67 year old female patient received a diagnosis of osteoporosis during her visit. The medical resident made a number of recommendations for preventing the progression, and while he mentioned diet, he focused more on medication and exercise. Since the diet recommendation was very brief and was not the focus of the discussion, the patient may not have remembered this part of the discussion. For another patient, a 65 year old female, her resident physician advised her that to avoid diverticulitis flare-ups, the patient may, "want to eat higher fiber type foods and things. And stay away from seeds and nuts and things can cause some problems." This brief advice constituted the entire extent of the diet discussion and was delivered in a somewhat rushed manner, where the resident physician did not expect, or even wait for, a reply. It does not seem surprising that patients, particularly when they have other health concerns, would not remember a discussion that is so brief. Flocke and Stange (2004) found that advice of longer duration is more likely to be recalled and Butler and colleagues (1999) suggest that more extensive advice is also more likely to result in behavior change.

Factors external to the discussion itself - e.g. the presence of other individuals who may have served as distractions or patients' impaired memory - also may have contributed to poor recall. As previously mentioned, for a few of the patients, their visits co-occurred with a spouse's visit; the spouse joined the patient in the exam room and had their visit at the same time. Perhaps, when listening to two complete visits, the ability to recall visit content declines. Lower recall for one's own visit may be particularly likely when the patient is attentive to the spouse's visit – the spouse's visit may therefore serve

as a distractor, which prior research indicates may interfere with acquisition of information (Maccoby & Hagen, 1965). The co-occurrence of two visits also likely relates to a greater total amount of information being conveyed. Memory research suggests that as the total quantity of information conveyed increases, individuals will remember more information, but a smaller percentage of the total information (Schraa & Dirks, 1982; Ward, 2002). Patients exposed to two visits worth of information may therefore be more likely to fail to remember any single discussion item. It is also possible that individuals with poorer memory choose to have a spouse accompany them for that very reason and therefore the lower recall may reflect poor patient recall independent of visit factors.

Poor patient recall – as a personal characteristic and not as a reflection of the visit discussion – may explain poor recall for diet and physical activity discussions. In general, the self-rated recalls for the patients who did not recall discussions of diet and physical activity when discussions with recommendations had occurred were consistent with the overall patient sample; however, one of the patients who did not recall discussion of diet in a visit that included a diet recommendation rated the extent she remembered as only a three out of ten. Other researchers, however, have suggested that confidence in one's own recall may be a poor predictor of recall accuracy (Schiffman & Graham, 2000).

In terms of the potential influence of these recommendations that are not recalled, hopefully the patients who fail to recall recommendations when they are already engaging in the recommended behavior internalized the encouragement and reinforcement provided for their choices without being consciously aware of the advice. For patients who may recall the discussion but do not consider it as part of diet or

physical activity, their different interpretations of terminology will reduce the recall reported for research purposes but should not influence the impact of the recommendation. However, many of these other possible explanations for the failure to recall information are factors that providers may want to keep in mind to increase the impact of their recommendations. In this next section I explore a theoretical framework to understand the influence of provider recommendations. Following the presentation of this framework, I propose some implications of the research findings/theoretical framework for providers.

Theory Integration to Understand the Influence of Provider Recommendations

The value of theory.

Theories offer a way of examining complex issues, suggesting factors on which to focus (Reeves, Albert, Kuper, & Hodges, 2008). Theories can be used to inform research questions, methodology, and interpretation of findings (Reeves et al., 2008). Theories help researchers and practitioners apply the findings from a single study to other contexts (Brewer & Rimer, 2008). By supporting application to other circumstances, theory enables researchers to test, criticize, and revise existing theories to advance knowledge. Theories also provide a framework for understanding the factors, processes, and mechanisms that explain a relationship, not just that the relationship exists (Reeves et al., 2008).

Use of theory to understand provider influence on patient health behaviors.

Health behavior change theories typically focus on the patient and emphasize knowledge and motivation. Social influences, such as the role of behavioral modeling or perceived social norms, are occasionally incorporated. Despite providers' potential to be

a strong social influence on patient behavior, I was unable to find existing research that applied theory to understand how providers communicate to influence patient behavior. While research indicates low levels of adherence to providers' recommendations across a wide range of behaviors, theories seem underutilized in the clinical context and do not seem to tackle the way in which a provider's recommendations influence, or fail to influence, a patient. The findings from the current research suggest that the integration of Self Determination Theory (SDT) and the Extended Parallel Process Model (EPPM) may help explain providers' influence on patient physical activity and dietary behaviors.

SDT highlights the role of autonomy, competence, and relatedness in patients' health behavior decisions (Ryan, Patrick, Deci, & Williams, 2008). Autonomy relates to personally endorsing the value of the behavior. The likelihood of this endorsement may depend on the perceived threat of unhealthy behaviors, the value of healthy behaviors, and motivation to make changes. Autonomy is a critical component of health behavior change, because without the perceived need or value of making a change, a patient, however efficacious in his or her ability to make changes, is unlikely to take even the minimal effort required to do so. Competence refers to the confidence and skills to engage in the behavior, which may involve both self-efficacy as well as supportive resources or tools, including concrete steps for initiating a new behavior (Ryan, Patrick, Deci, & Williams, 2008). Competence may also involve response-efficacy, the belief that changes will make an impact. Relatedness refers to a sense of connection, trust, and support, in this context with the provider (Ryan et al., 2008). SDT focuses on individuals' psychological drives and suggests that when autonomy, competence, and relatedness are maximized, the likelihood of change is greater.

Rather than focusing on psychological drives to explain individual behavior, the EPPM explores how message elements shape individual behavior. The EPPM is therefore appropriate for addressing specific aim #2, whether and how patient perceptions of their provider's physical activity and dietary recommendations influence engagement in these behaviors. While the EPPM was designed for fear arousing messages, the framework also seems appropriate for the context of diet and physical activity behaviors (the rationale for which may sometimes involve fear messages relating to the consequences of poor health behaviors and sometimes may focus more on the benefits of healthy behaviors) (Witte, 1992).

The EPPM suggests that health risk messages have message components of self-efficacy, response efficacy, susceptibility, and severity (Witte, 1992). When exposed to health risk messages, individuals evaluate the threat, based on perceived susceptibility and severity, and efficacy of the recommended response, based on perceived self-efficacy and response efficacy. If no threat is perceived this leads to no response. If perceived efficacy and perceived threat are high there is a danger control response, whereby the individual takes action to protect himself or herself against the threat. This response where the individual takes action when efficacy and threat are high is referred to as protection motivation. Under a protection motivation response the individual typically accepts the message, leading to changes in his attitude, intention, and behavior, as suggested by the recommendation. If however, perceived efficacy is low and perceived threat is high, there is a fear control response referred to as defensive motivation. Under a defensive motivation response, the individual typically rejects the message through defensive avoidance (blocking further thoughts or feelings about a given threat, distorting

or ignoring further information), denial (refusing to believe they could experience the threat), or reactance (saying the message or source of the message is trying to manipulate them, leading to rejection or anger). As long as perceived efficacy is greater than perceived threat, individuals will engage in danger control processes. The EPPM has a sequential assumption that a certain level of threat needs to be perceived before people will consider efficacy (Witte, 1992).

SDT and the EPPM both highlight factors that are important to health behavior change, but these factors can be better understood if these two theories are integrated. Since the EPPM was designed for fear appeal messages, it needs to be adapted to acknowledge not just fear-related motivations for health behavior change, but also perceived positive outcomes of healthy behavior changes. Accordingly, the concept of autonomy seems more inclusive than perceived threat. Autonomy in this context can encompass perceived threat *and* perceived value of making the suggested changes. The current research found that patients expressed the value of healthy diet and physical activity both in terms of the positives of these behaviors and in the ability to avoid negative outcomes of not engaging in these behaviors. Autonomy also related to motivation to make the suggested changes; motivation was shaped by health concerns, anticipated benefits of changes, perceptions of old age, and providers' indication of the need for change. Since competence refers to both self and response efficacy, competence and perceived efficacy seem to be fairly equivalent terms. Competence in the context of diet and physical activity was influenced by past attempts and feedback for those attempts, providers' encouragement and alleviation of patient concerns, and the provision

of feasible, actionable plans for change. SDT also suggests that relatedness, or the relationship with the provider, may also contribute to how a message is perceived.

In Figure 2, I have combined SDT and the EPPM. As the figure illustrates, providers have the potential to influence their patients' autonomy and competence. The convergence of high levels of autonomy and high levels of competence, when the patient sees the value of health behaviors, is motivated to obtain that value, and feels able to do so, leads to "protective motivation" or message acceptance. "Protective motivation" or message acceptance means the individual wants to control the danger or realize the potential benefits, and therefore is likely to attempt to make healthy changes. Figure 2 also demonstrates how life context - particularly finances, family, convenient options, and environment - and individual differences may impact the way providers communicate and the way patients respond to providers' messages.

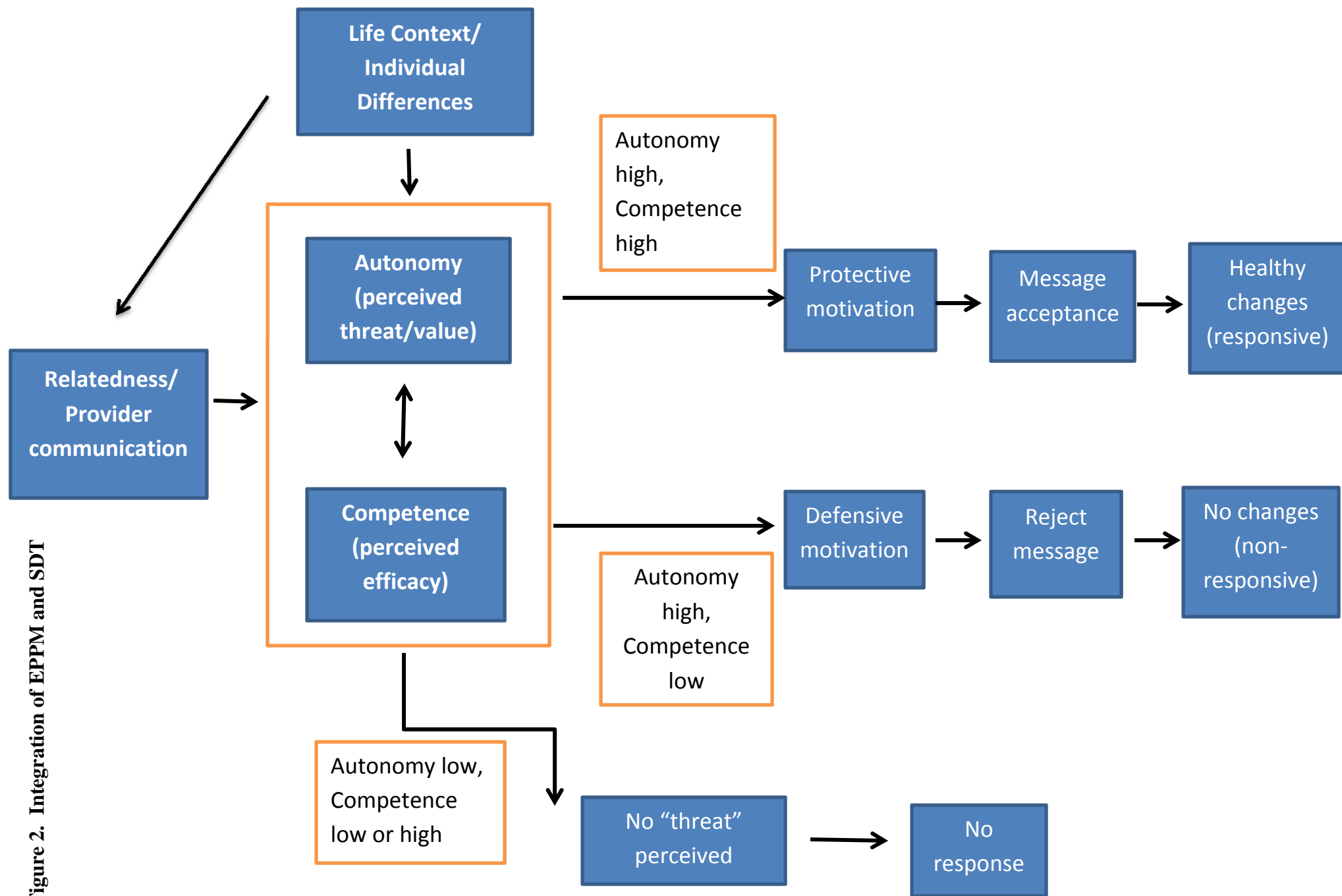


Figure 2. Integration of EPPM and SDT

Implications for Providers

In this section I first explore the implications for providers of the findings regarding failure to recall discussions of diet and physical activity. Then I discuss the implications of the integrated theoretical framework for providers' efforts to promote diet and physical activity.

Implications of recall findings for providers' efforts to improve patients' diets and physical activity.

Patients' recall failures, and many of the hypothesized explanations for these failures, suggest counseling strategies to increase the likelihood that recommendations will be influential. Providers may want to take their time in delivering recommendations and make sure to emphasize or reiterate recommendations they feel are important. Providers may also want to confirm patient understanding or recall to increase the likelihood that the patient may remember and act upon the recommendation after the visit concludes. By confirming patient comprehension, providers may also be alerted to differences in understanding; for instance, patients may differ in their interpretation of terms such as "regularly" or "excessive" – whereby providers may not be conveying the recommendations they intend (Doak, Doak, Friedell, & Meade, 1998).

While multiple strategies exist to support patient recall, providers vary in their use of these approaches. Silberman and colleagues (2008) audio-recorded 49 standardized primary care patient visits for gastroesophageal reflux disease symptoms to explore how frequently providers use techniques to promote recall. They found that recall-promoting behaviors such as repetition or summarization were more common during longer visits, but were underutilized. The recall-promoting behaviors they observed included repetitions, communicating the rationale for a treatment, categorizing treatments (e.g., as related to lifestyle), or emphasizing the importance of

the recommendation. Physicians never summarized recommendations or confirmed patient understanding by asking patients to restate recommendations.

Implications of the integrated theoretical framework for providers' efforts to improve patients' diets and physical activity.

The interview findings suggest providers influence their patients by establishing strong patient-provider relationships (relatedness) and by supporting patient autonomy and confidence through effective communication. By forming positive relationships with patients, the potential for providers to influence patient behavior is greater. Figure 2 demonstrates that external stimuli, including life context and individual differences, can influence individuals' choices. For providers to effectively counsel their patients on diet and physical activity, they should demonstrate knowledge of a patient's life context – personalizing the value of changes, problem solving barriers to change, taking advantage of life opportunities, and drawing on patients' assets or supports.

In the current study, patients were overwhelmingly positive about their providers; patients reported high levels of satisfaction with, trust in, support by, and sense of connection with their providers. Patients' positive views of their providers are consistent with prior research (Noel, Frueh, Larme, & Pugh, 2005). Given that relatedness is already high among most patients, providers may be most effective in creating change by focusing on enhancing patient autonomy and competence through their communication regarding diet and physical activity. For patients to make changes to their health behaviors - to go from knowledge to action - some sort of impetus or cue to action is usually necessary (Elder, Ayala, & Harris, 1999). Providers, through improved communication, can serve as this impetus and provide “the kick in the pants”

some patients report needing. Providers who do not provide any recommendations may be perceived as sending implicit approval that the patient's current behaviors are acceptable.

How providers can promote patient autonomy.

Autonomy refers to individuals' desire to be in control of their own actions. In the context of diet and physical activity changes, I am operationalizing autonomy as personally endorsing the value of the behavior. If the patient identifies the value of the behavior, he or she is more likely to be motivated to make changes. Providers can support patient autonomy by helping patients apply health behavior knowledge to their personal circumstances, increasing patients' awareness of the value of healthy diet and physical activity to their own life. By developing an understanding of their patients that goes beyond a list of medical ailments, and becoming aware of patient's values and goals, providers can use their medical knowledge to highlight how healthy diet and physical activity can help support patients' personal health and life goals. For instance, many patients discussed avoidance of medication as a potential motivator to engage in healthier lifestyle behaviors. If providers can help patients recognize how this is possible, or help them see what value these improved behaviors could have even if also on medication, patients' motivation to engage in healthy behaviors may be enhanced (Williams, Freedman, & Deci, 1998). The perceived value of healthy diet can be enhanced by acknowledging upcoming life events that may help motivate the patient.

In drawing connections with patients' life goals, it may also be helpful to share the positive possibilities for health and activity in old age. The current research suggests that understanding the positive possibilities in old age, and not just accepting decline, can influence health goals and motivation for and engagement in healthy behaviors (Costello, Kafchinski, Vrazel, & Sullivan, 2011; Levy & Myers, 2004; Sarkisian, Prohaska, Wong, Hirsch, &

Mangione, 2005). Providers can support patient motivation in this respect by avoiding dismissing complaints due to age and helping make sure patients express their concerns. Some patients do not bring issues up with their providers because they assume they are a normal part of old age or because they feel they have nothing to complain about given their age (Sarkisian, Hays, & Mangione, 2002). Many of these perceptions of normalcy are “more societal artifacts than objective age-related phenomena” (Minkler, 1990, p. 246), whereby aging, functional impairment, and disease are inappropriately equated (Bortz, 1982). In order to identify health issues patients may dismiss prematurely, providers may want to ask patients about any changes, not just about changes of concern to them. Providers also need to find a balance between maintaining patients’ self-esteem and positive self-assessments for how they are doing, while also helping patients recognize opportunities for improvement - the possibilities or advantages they could experience if they engage in diet and physical activity changes (Hazzard, 1997). Views on aging have multiple societal influences, and older patients may internalize negative perceptions of aging, but providers can do their part not to further the idea of aging as synonymous with debilitation (Palmore, 2005; Rodin & Langer, 1980).

Combating negative perceptions of aging may be challenging for providers, many of whom hold ageist beliefs themselves (Gunderson, Tomkowiak, Menachemi, & Brooks, 2005). The challenge may be exacerbated when providers have limited interaction with healthy older adults and base their impressions of old age on the sick individuals they encounter during their medical practice (Bardach & Rowles, 2012; Lee, Reuben, & Ferrell, 2005). Davis and colleagues (2011) found that providers with more positive expectations for old age viewed preventive counseling as more important than providers with more negative expectations for old age. When providers hold lower expectations of functional abilities in old age, they may

evaluate older adults' health behavior more positively (since behaviors are more likely to exceed low expectations) and therefore may be less likely to provide recommendations (Kwong See & Heller, 2004).

Providers also may be able to help enhance motivation by relating the value of diet and physical activity to patients' current conditions, explaining how diet and physical activity may help reduce symptoms, improve disease management, and reduce reliance on medications (Thompson et al., 2003). Consistent with prior research, patients in the current study shared how a desire to avoid medication influenced them to make lifestyle changes (Goldman, Quilliam, & Lapane, 2012). Providers may also want to recognize the delivery of new health diagnoses as opportunities to motivate patients, as patients may be more likely to see the need for change at these times (Demark-Wahnefried et al., 2005). Prior research has identified hospitalizations, health symptoms, and new diagnoses as "teachable moments" for health behavior change (Esler & Bock, 2004; Fonarow, 2003; McBride, Emmons, & Lipkus, 2003; Sussman et al., 2006). Lawson and Flocke (2009) suggest that these events or contexts may represent deviations from patients' expectations of health and result in an increased readiness and capacity for change. McBride, Emmons, and Lipkus (2003) suggest that cancer diagnosis can be a valuable teaching opportunity – with the new diagnosis serving as a cue to action by increasing perceptions of risk and creating a heightened emotional response. Currently the opportunity of these "teachable moments" is often underused by providers (Gritz et al., 2006).

Providers may also be able to promote healthy diet and physical activity by helping patients understand the benefits of changes they have already made (DiClemente, Marinilli, Singh, & Bellino, 2001). These benefits can be conveyed by highlighting improvements in lab values, acknowledging progress towards weight loss goals, or by discussing some of the health

benefits that may not be easily noticeable but can still reduce the patient's likelihood of adverse events. Research suggests that when individuals believe they are making progress toward a goal, they become more motivated to continue working towards that goal; in contrast, individuals' motivation can decrease when progress is not acknowledged (Nunes & Drèze, 2006).

Highlighting the potential long-term value of feedback, Cagliero, Levina, and Nathan (1999) found that the provision of immediate feedback during a patient's office visit – in the form of A1C values – led to better glycemic control even an entire year later. Other researchers have found that objective feedback helps motivate patients and results in improved disease management (Ignacio-Garcia & Gonzalez-Santos, 1995; Stahl, Kelley, Neill, Grim, & Mamlin, 1984).

Providers can also enhance patient autonomy by discussing health recommendations, strengthening the perceived need for change, and suggesting specific plans for change, as having a clear vision for improved health seems to increase motivation. Providers may need to develop a sensitivity to when autonomy has already been maximized and the focus should be shifted towards strengthening the patient's competence. If patients see the value of health behavior change but do not feel they have the ability or idea for how to make those changes, the likelihood of change taking place is very low. Those who perceive themselves as doing well despite less healthy behaviors may begin to rationalize that healthy diet and physical activity are not that important, particularly if they feel powerless to create change. This response would be a type of defensive motivation where the message would be rejected and no changes would be made.

How providers can promote patient competence.

Competence refers to an individuals' perceived ability to make an effective change. I focus on perceived ability because I am interested in how competence influences patients'

responses to messages. The perception of the ability to make changes, not individuals' actual ability to make changes, will influence whether individuals attempt changes. If my focus encompassed behavior change, and not just perceived influence, it would be helpful to examine competence more broadly. Actual competence still plays a role in perceived competence; past attempts with dietary and physical activity changes influence current perceptions of competence.

The interview findings revealed that autonomy and competence were linked for many patients; patients who were more motivated often also felt more able to make changes. This interconnectedness suggests that the aforementioned opportunities for enhancing autonomy also have the potential to enhance competence. However, it is important that providers not overlook the role of competence. If providers focus only on education and autonomy and ignore competence, their messages are not likely to have much impact. Competence is critical because even if highly motivated, if patients do not feel capable of making changes, they are likely to respond with “defensive motivation” or a “fear-control response” whereby they reject the message or discount the idea of being more active because it does not seem attainable to them. Patients may convince themselves the suggested behavior really is not that important after all, that their health behaviors or health status is normal for older adults and no change is needed, or that medication will be sufficient; the end result being that without perceived competence the patient is unlikely to make any changes.

Patients' competence to make diet and physical activity changes is supported by clear, specific recommendations and plans for achieving those recommendations. Bradshaw and colleagues (1975) found that specific instructions led to better recall of advice than general rules. Many patients in the current study expressed being discouraged to make future changes due to past failures –stressing the importance of problem solving more feasible approaches for proposed

future changes. Repeated failures likely feed into perceived futility (Bandura, 1997); thus support to promote the likelihood of success may have benefits for current and future health behavior change attempts.

Provider support for health behavior change can take a number of different forms including alleviating concerns, problem solving and developing plans, and providing encouragement. Some patients reported understanding the importance of healthy behaviors, but shared concerns that their health in some way prevented them from engaging in those behaviors. While some patients voiced these perceived barriers to their providers, others may not have expressed similar concerns. By working with patients to develop plans for change, concerns might be better addressed and feasible plans for change can be created. Finally, once a plan has been developed or changes are underway, encouragement may also help serve as the impetus a patient needs to commence or sustain new behaviors.

Recognizing context.

While the current research focused on communication between providers and patients, it is important to remain cognizant that diet and physical activity behaviors are influenced by a variety of individual, social, and environmental factors (Booth et al., 2001). While this study addressed the way in which the clinical environment and provider communication can be shaped to promote healthier behaviors, efforts to promote healthier behaviors will be most successful when multiple approaches, addressing various sources of influence, are attempted. Providers will be most successful in their counseling efforts if they acknowledge the patients' life context, take advantage of family supports, and draw upon community resources. Providers should recognize how non-medical considerations, or a patient's social location, influence receptivity to recommendations. Researchers have found that various elements of social location – including

place of residence, socioeconomic status, education, race/ethnicity, and social supports – all can influence provider recommendations and patients’ comprehension and response to these recommendation (Hajjaj, Salek, Basra, & Finlay, 2010; Hausmann et al., 2011; Peek et al., 2010; Smith, Wolf, & Wagner, 2010). Patients identified many of these factors as influencing their diet and physical behaviors. Providers should avoid making assumptions based on a patient’s characteristics, but should work with patients to develop plans for change that are feasible and sustainable given patients’ personal contexts.

Providers can increase their understanding of patient life context by asking patients questions about their desires for and perceived ability to make behavior changes. When patients question the value of improving their health behaviors or their ability to make behavior changes, providers should inquire about the factors shaping patients’ perceptions of the importance of the behaviors and their predicted success in making changes. Some providers try to encourage changes or reassure the patient regarding his or her ability to make changes without understanding the patient’s life context. For instance, one provider in the current research tried to encourage his 84 year old male patient to try a cardiac rehabilitation program. The patient expressed how was not fond of that idea and rather than delve into why the patient felt this way, the provider responded, “Well, just give it a try and see how it goes? Ok?” The patient reluctantly agreed to give the program a try, but when I asked this patient about the likelihood of attending the program he said “oh, I’ll have to think on it.” His response suggests that encouragement without addressing life context was not likely to be very persuasive. While providers offering encouragement for health behavior change certainly have very positive intentions, the failure to address the psychosocial and environmental determinants of patients’ health behaviors reduces the likelihood that the provider will be influential.

Barriers to Provider Counseling

There are a range of factors which may hinder providers' ability to counsel regarding diet and physical activity. These factors include limited visit time, limited training and knowledge regarding effective counseling approaches, perceived futility of counseling efforts, and providers' own suboptimal health behaviors. Efforts to improve the frequency and influence of provider diet and physical activity counseling should acknowledge these constraints – and ideally try to alter this context. I discuss how each of these factors limits providers' counseling efforts. I conducted interviews with three providers (one in Family and Community Medicine and two in Internal Medicine) to discuss the translational potential of my research; these interviews revealed that these barriers to provider counseling also exist in the current research environment.

Limited Visit Time

Time pressures are frequently provided as an explanation for why diet and physical activity are not discussed, or are discussed only to a very limited extent (Abramson et al., 2000; Dolor et al., 2010; Ruelaz et al., 2007; Wee, McCarthy, Davis, & Phillips, 1999). These time pressure challenges can be exacerbated with patients with multiple chronic conditions - sometimes with pressing or acute needs - where the demands of disease management may leave little time for discussion of prevention (Bardach & Schoenberg, 2012). When discussion of diet and physical activity does occur, it may be overly general and not adequately personalized to the patient's health needs or personal circumstance.

Limited Training and Knowledge about Effective Counseling Approaches

Providers receive limited training in diet, physical activity, community resources (such as public health department services) to support diet and physical activity, and counseling strategies to promote diet and physical activity. Adams and colleagues (2010) found that the majority of

U.S. medical schools do not provide the recommended minimum standard, suggested by the National Academy of Science, of 25 hours of nutrition instruction. Deen, Spencer, and Kolasa (2003) reviewed family practice residency programs in the U.S. and found a wide range of time devoted to nutrition instruction, ranging from nonexistent to 40 hours. Vetter and colleagues (2008) found that 86% of internal medicine interns feel inadequately trained to provide nutrition counseling. Huang and colleagues (2004) suggest that perceptions of limited knowledge and skill limit providers' weight loss counseling efforts. Forman-Hoffman, Little, and Wahls (2006) found that providers who lacked obesity training during medical school and residency discussed diet and exercise less frequently with their obese patients than providers who had received such training.

Providers' limited training in diet and physical activity counseling hinders providers in their counseling efforts (Jay et al., 2008). Providers with training in health behavior change techniques and those with greater counseling self-efficacy are more likely to counsel patients (Huang et al., 2004; Thompson, Schwankovsky, & Pitts, 1993). Katz and colleagues (2008) found that physical activity counseling training that involved practical tools to assess stages of readiness and respond appropriately resulted in more physician counseling and increases in patients' physical activity levels.

Providers in the current research occasionally exhibited limitations in their knowledge about how to counsel their patients on diet and physical activity. For instance, a few providers in my study counseled their patients about not adding salt to food; condiments, however, contribute only 4.4% of the sodium in people's diet, making this an unlikely way to make a meaningful change in patients' sodium levels (United States Department of Agriculture and United States Department of Health and Human Services, 2010). Phillips and colleagues (2012) examined

simulated patient visits focused on smoking cessation and healthy eating; they found that providers varied more in what aspects of change they recommended, offered more idiosyncratic advice for how to make changes, were less patient-centered, suggested few monitoring strategies, were less likely to indicate short term benefits, and engaged in less discussion of barriers to change in the context of healthy eating than they did in conversations pertaining to smoking cessation. These findings highlight the need for enhanced provider training on how to support patient lifestyle changes.

The integration of clinical and community services to promote diet and physical activity is also important – but evidence for how to do so, and knowledge of available community resources, is still limited (Ockene et al., 2007; Sussman et al., 2006; Zemencuk, Feightner, Hayward, Skarupski, & Katz, 1998). Some of the limitations in provider training may reflect insufficient evidence-based research regarding optimal engagement in these behaviors, how to most effectively reach those goals, and how to most effectively counsel patients to obtain those goals (Salmela, Poskiparta, Kasila, Vähäsarja, & Vanhala, 2009). Researchers are currently exploring counseling strategies such as the teachable moment communication process to improve counseling for lifestyle behaviors; initial findings suggest this model may be feasible to use, exploration of its effectiveness on patient behavior is currently underway (Flocke et al., 2012).

Perceived Futility of Counseling Efforts

Related to the limited evidence base for counseling approaches for diet and physical activity, providers often are discouraged from engaging in diet and physical activity counseling due to their perceptions of futility (Bardach & Schoenberg, 2012; Kolagotla & Adams, 2004). Many providers do not view themselves as effective in helping patients with disease prevention (Mosca et al., 2005). Dolor and colleagues (2010) surveyed primary care physicians and found

that only 8% of respondents thought it likely that patients would follow their diet or exercise advice. Without the belief counseling will be effective, and given visit time constraints, providers often prioritize other care needs (Sussman et al., 2006). Associated with this sense of futility, providers are often concerned that not only are they ineffective at changing behavior, but they also may make the patient feel embarrassed (Dolor et al., 2010). According to Self-Determination Theory, as providers' perceived competence in their ability to counsel effectively declines, over time they are less likely to offer such counseling (Ryan & Deci, 2000).

Providers' Health Behaviors

Providers own health behaviors may also influence their counseling motivation and ability (Rose, Frank, & Carrera, 2011). Physicians who regularly exercise themselves are significantly more likely to counsel their patients regarding exercise than those who do not exercise regularly (Abramson et al., 2000; Frank et al., 2003). Patients also find providers who follow healthier diets and engage in physical activity more motivating in terms of their health behavior recommendations than providers with poorer health behaviors (Frank, Breyan, & Elon, 2000). Consequently, providers with suboptimal health behaviors are less likely to counsel, and are less effective in their counseling attempts, than providers engaging in healthier behaviors.

Implications of My Research Findings for the Healthcare System

Healthcare in the United States is constantly evolving. Current healthcare reforms include explorations of new, more integrated models of healthcare delivery. Integrated, team-based care may be of particular value to older adults, who have multiple health needs, and may be particularly beneficial in regard to healthy diet and physical activity promotion (Calfas et al., 1996; Ockene et al., 1996; Simons-Morton, Calfas, Oldenburg, & Burton, 1998). Primary care providers may also feel a reduction in time constraints if they are able to refer patients to social

workers, dietitians, diabetes educators, physical therapists, and other providers who may be able to share the burden of behavioral counseling. Primary care providers, however, would still need to strengthen their own counseling comfort to at least be able to offer referrals and convey the importance of following through on these referrals. Primary care providers are likely to remain most capable of recognizing and alleviating patient concerns that may otherwise serve as barriers to change. Future research should evaluate behavioral counseling across community and clinical settings to identify successful strategies and collaborations to promote healthy diet and physical activity engagement. To support these efforts, diet and physical activity counseling should also be reimbursed appropriately to acknowledge the time demands of these discussions.

In addition to the reforms regarding models of care, healthcare has also been shifting to a greater reliance on electronic medical records (EMRs). Since the time that the data for this research were collected, the Department of Internal Medicine has adopted an EMR system. In July 2013, the Department of Family and Community Medicine is scheduled to follow suit. Prior research has found that EMRs can support delivery of prevention services, and that with increasing levels of functionality, rates of diet and physical activity counseling increase (Tundia et al., 2012). The EMR can serve as a helpful resource - by providing alerts, counseling templates, and features for searching prior visit content - for providers to track their discussions of diet and physical activity and use this information to personalize future counseling, follow up on discussions of planned changes, share when changes seem to have benefited the patient, and provide encouragement for recent and planned changes (Tang et al., 2012). EMRs vary widely; some EMRs include structured sections to record diet and physical activity behaviors, others include open notes sections where providers can include these behaviors, and the majority do not include diet or physical activity information at all (Glasgow, Kaplan, Ockene, Fisher, &

Emmons, 2012). To realize the potential of EMRs it will be helpful if providers share with those who design and support the EMRs when and how modifications to the existing structure could support diet and physical activity counseling (Doebbeling, Chou, & Tierney, 2006; Rattay, Ramakrishnan, Atkinson, Gilson, & Drayton, 2009).

Potentially linked to the use of EMRs is the opportunity for healthcare system changes to transform waiting time from a simple delay to an opportunity to promote diet and physical activity. Given that providers often view time as a significant barrier to diet and physical activity counseling, waiting time could be better used to reduce this constraint. Patients in this study spent nearly as much time waiting once called back to their exam rooms (an average of 17.6 minutes) as they did being seen by providers (an average of 26.6 minutes). This 17.6 minute average waiting period does not include the amount of time patients waited to be called back initially; while I did not measure the waiting time between when a patient arrived and when they were called back, it often seemed to be rather extensive. Previous research has found that providers often place educational materials in waiting rooms (Gignon, Idris, Manaouil, & Ganry, 2012) and has explored the use of multimedia educational material in waiting areas (Gerber et al., 2005). One approach for taking advantage of waiting times to promote healthy diet and physical activity behaviors would be to use these waiting times to assess readiness to change so that providers could counsel at times when patients might be most receptive to change, or could at least tailor their counseling to a patient's stage of readiness (Logue, Sutton, Jarjoura, & Smucker, 2000). Research in emergency departments suggests that self-administered computer-based health risk assessments can increase the likelihood of patients sharing behavioral risk factors, requesting health information, and recalling advice (Rhodes et al., 2001). Research also suggests that the majority of patients report no difficulty using tablet computers to complete

health questionnaires, though older patients are more likely than younger patients to experience some difficulty (Hess, Santucci, McTigue, Fischer, & Kapoor, 2008). Opportunities for the use of waiting time in primary care, both in the waiting area and the exam room, to promote health behavior change should be explored further and evaluated for effectiveness (Gignon et al., 2012).

Future Directions

The current research explored patient perceptions of provider recommendations regarding diet and physical activity, but I focused on perceived behavioral influence, not on patients' emotional or affective responses to their providers' recommendations. Prior research regarding youth overweight has suggested that the choice of terminology may impact responses; terms such as "unhealthy weight" and "weight problem" were perceived as more motivating whereas terms such as "fat" and "obese" were viewed as more stigmatizing and less motivating (Puhl, Peterson, & Luedicke, 2011). Previous research also suggests that overweight patients both expect and want their providers to engage in weight-loss counseling, including diet and physical activity recommendations, and often want more help than they believe they receive (Dolor et al., 2010; Little et al., 2001b; Potter, Vu, & Croughan-Minihane, 2001; Whitlock, Orleans, Pender, & Allan, 2002). In the current research there were a few patients who reported that their providers talked to them about diet and physical activity repeatedly and indicated that while they followed their providers' medication and testing recommendations, they did not follow their provider's health behavior recommendations. While it is feasible that patients with repeated diet and physical activity discussions that do not result in any behavior change may feel nagged or disparaged, these patients did not express any negative feelings about their providers or the diet and physical activity discussions. To be able to offer providers further assurance, however, and alleviate any concerns that discussions of diet and physical activity may make patients feel

embarrassed or hounded, future research should explore the emotional impact of these discussions.

Research addressing patients' emotional responses to diet, physical activity, and weight discussions may increase providers' comfort responding to patient initiation of these topics. In the current research, even when patients brought up the issue of weight, providers sometimes seemed uncertain how to respond. Some patients used humor to broach the topic of being overweight and providers often seemed hesitant to engage in these conversations. Patients sometimes shared their current diet and physical activity efforts with a desire for weight loss, and occasionally received responses of simply "okay." This response may have been discouraging if patients sought reinforcement or encouragement. Similarly, providers occasionally broached the topics of diet and physical activity through checklist type questions and then did not follow-up on patient responses. Providers' questioning patients about their health behaviors without further discussion may be particularly likely to send the message to the patient that the patient's current behaviors are appropriate. When patients believe their provider is aware of their current health behaviors and trust that their provider is looking out for their health, the lack of any advice is perceived as indicative of no need for change. Increasing providers' comfort engaging in discussion of these topics would reduce the likelihood of sending inadvertent implicit messages that no behavior change is needed. To better understand patients' affective responses to discussions of diet and physical activity it may be helpful to examine diet and physical activity recommendations across visits – as the continuity of diet and physical activity discussions is likely to impact current responses to recommendations.

Study Limitations

While this study made a significant contribution to our understanding of provider recommendations regarding diet and physical activity with older adults and the influence of these recommendations on patients, I acknowledge several important limitations. I conducted the research in a single academic medical center. While patients were recruited from two different departments to increase the diversity of patients and providers, these findings may not be generalizable to other settings.

The possibility of a selection bias in terms of the providers who agreed to participate may also limit generalizability. Providers who chose to participate may have been more interested in communication or quality improvement than those who declined to participate. Also, while I did not discuss the specific focus on diet and physical activity, the consent form did reference “lifestyle changes” and thus, participating providers may have been more prevention oriented. If the participating providers differed from the non-participating providers, it is possible that the frequency of diet and physical activity discussions may have been slightly reduced, but the knowledge gained regarding how this diet and physical activity communication is perceived by patients would still apply. Similarly, the consent form’s reference to lifestyle changes may have sensitized patients to these issues, possibly resulting in more frequent lifestyle discussions or better recall of these discussions.

In the current research I only included attending physicians, resident physicians, physician assistants, nurse practitioners, and medical students. To provide a more comprehensive picture of a patient’s care, the initial interaction with the intake nurse/technician would also have been included. For practical concerns, e.g., to avoid an additional round of informed consents documents, these providers involved in the intake process were not included.

The exclusion of intake providers is a potential missed opportunity, however, as these individuals frequently took the patient's weight and inquired about the reason for that day's visit. While not evaluated in the current research, this initial intake could be an opportunity to engage patients by acknowledging weight loss needs and drawing connections between current health concerns and the potential for diet and physical activity to address these concerns. A more complete picture of the potential of counseling would also involve the range of healthcare providers a patient interacts with including dietitians, social workers, pharmacists, and other health educators.

The measurement of waiting time used in the current research was limited to after a patient was in the exam room. Assessing initial waiting time, in the waiting room before being called back, would have provided additional information about patients' care experiences. While collection of this information would have been logistically challenging, it may have had important implications for interventions targeting waiting times. Previous research using self-reported assessment of waiting times in a primary care clinic suggest that 62% of patients wait more than 15 minutes to be seen by their provider (Anderson, Camacho, & Balkrishnan, 2007). Another study found that without any intervention, the average time between registration and being seen by a medical assistant in an internal medicine residency clinic was 18 minutes (Fischman, 2010). Unpublished data based on observation of 38 patients in the same Internal Medicine Department that patients were recruited from for my research suggest that patients wait an average of 11 minutes in the waiting room (Schuer, 2013). Interventions designed for the waiting room should evaluate the waiting times and registration procedures within the proposed clinics to maximize opportunities without interfering with clinic flow.

I chose to place recorders in the exam room, rather than to be present myself, to minimize the impact of research involvement on the clinical care experience. It is still possible, that while unobtrusive, the presence of the recorders did create a Hawthorne effect (Mangione-Smith, Elliott, McDonald, & McGlynn, 2002). A Hawthorne effect refers to when someone alters his or her behavior due to their awareness of being observed. When initially agreeing to participate, one of the participating providers candidly shared his belief that “just seeing you there, my quality of care is going to go up.” At the conclusion of my research, one of the participating providers suggested that she was more conscious of her communication in the first two minutes of the visit, but felt that she subsequently would forget that the recorders were there. Patients also seemed aware of the recorders initially – they frequently mentioned the presence of the recorders to their providers within the first few minutes of their visit – but did not indicate any ongoing influence of the recorders. If the rooms had been equipped with recording devices (which some academic medical center office rooms are) it may have been possible to explore the ethics of recording visits and then requesting permission to listen to the recording immediately following the visit. The current environment did not create this possibility of recording covertly and then requesting consent and even if this opportunity had existed, I would be hesitant to interfere with the trust of confidentiality that a patient has at the doctor’s office. Prior research suggests that knowledge of being recorded in the clinic environment does not influence visit length or number of problems addressed (Pringle & Stewart-Evans, 1990).

The reliance on self-report to assess current diet and physical activity behaviors, height and weight, motivations and plans to change behaviors, and the influence of diet and physical activity discussions represents another limitation of the current research. Self-report may differ from “true” values, in part due to errors in recollection and in part due to social desirability

(Adams et al., 2005; Prince et al., 2008). In the current research, there were even instances where both members of a couple participated and provided different responses to the questions about fruit and vegetable consumption despite saying they ate all of their food together. While these measures may not be precise, they helped provide a rough insight into individuals' need for health behavior and weight change. Given the high percentage of patients still reporting being overweight or obese, physical inactivity, and suboptimal intakes of fruit and vegetables, it seems social desirability (patients trying to respond in a manner they thought would lead me to think favorably of them) did not significantly influence responses. If this study were an intervention or if change in behavior were being assessed, then further efforts, including triangulation of multi-dimensional measures, to provide accurate, reliable measures sensitive to change would have been warranted (Glasgow et al., 2005). Regarding the motivations and plans to change diet and physical activity, and the perceived influence of diet and physical activity discussions, ideally patients could be followed over time and actual behavior change could be evaluated. However, I was constrained by limited time and resources and thus patient perceptions were the most feasible and informative option available. I had also considered a pre-assessment before patients' visits so that it would be possible to evaluate whether there was any immediate impact on patients' motivations or plans to change their behaviors, but I chose not to risk influencing visit content by priming patients to think about these areas.

Another limitation of this research was that I did not include any assessment of patient health literacy, which may have been valuable information for understanding patients' recall for and interpretation of provider lifestyle advice. Knowledge of a patient's health literacy may help inform providers' counseling approaches regarding the extent of education that may be necessary on why and how to make lifestyle changes. Relatedly, I asked patients about discussions of diet

and physical activity, but did not routinely provide patients with a definition of these behaviors. This may have contributed to some underreporting of discussions of diet and physical activity.

These limitations are offset by several strengths. First, the account of the visit itself did not rely on self-report; I obtained the actual visit content through recording and transcription. Previous researchers had explored the nature of counseling suggesting that greater use of the 5As (assess, advise, agree, assist, and arrange) resulted in greater motivation and intentions for healthy eating and exercising (Jay et al., 2010). However, this research was based only on self-reported recollections of the discussion content, and thus, individuals who were more motivated to change their behaviors may have also been more likely to recall this discussion having taken place. The current research provided a rigorous examination of diet and physical activity discussions by not only recording the discussions themselves, but also ascertaining patient responses to these discussions through in-depth interviews. Finally, the diverse patient and provider research sample represent another strength of the current research.

Closing Thoughts

Given the potential for healthy diet and physical activity to improve the lives of older adults, future research should continue to explore how providers can most effectively influence patients to improve these behaviors. The current research suggested that the integration of Self-Determination Theory and the Extended Parallel Process Model may help explain how discussions of diet and physical activity influence, or fail to influence, patients. While prior research indicates the role of motivation and competence in health behavior decisions, the current research highlights the important interaction between these two constructs and the potential costs of not addressing both of these behavioral determinants. The current research also suggests that patients trust their providers, feel supported by them, and believe their providers are looking out for their health. Accordingly, patients indicated that providers can

influence patient motivation and competence positively, but can also detract from patient motivation by failing to address the importance of these behaviors. Fundamentals of survey design suggest that researchers only ask questions when they have a plan for how they will use the information; it seems the same lesson may also apply to the healthcare context. If providers are not prepared to respond to information regarding diet and physical activity, it may be best not to ask patients about those behaviors. Future research should test and refine the integrated model, illustrating the important relationship between motivation and competence, and explore ways to support providers in engaging in effective health behavior discussions. This research may require longitudinal records that include counseling strategies and patient health behaviors.

A Vision for the Future

As this research confirms, encouraging and supporting health behavior change is a complex process. My existing discussion has focused on how primary care providers can best promote healthy diet and physical activity given the current healthcare climate. However, this research also suggests some important questions. Given visit time demands and competing health management needs, can primary care providers really be expected to take on intensive counseling role? Should our expectations of primary care shift to a referral to another individual who could engage in this lifestyle counseling? The current medical system recognizes that certain basic needs are best addressed largely outside of primary care. For instance, patients see dentists to manage their oral health and optometrists for their vision needs. Both of these areas are important components of patient health, but the professional training to provide this care is distinct from the training primary care providers receive. Communication between providers, sharing relevant health information and patient needs, supports the effectiveness of this care in promoting patient health. Primary care providers can also serve as advocates for this care,

referring patients to these services and highlighting the importance of these visits to patients' overall health. Could a similar referral model be developed for diet and physical activity? Could primary care providers stress the importance of these behaviors and refer to a wellness expert for discussion of how to make lifestyle changes? When qualifications match the tasks sought, efforts are more cost-effective and likely more successful as well (Chadi, 2011; Christensen, Bohmer, & Kenagy, 2000).

The need for change is apparent. Yarnall et al. (2003)'s findings - that to satisfy the United States Preventive Services Task Force recommendations 7.4 hours of a physician's time would be required per day - highlight that primary care providers cannot realistically address all of their patients' healthcare needs. Similarly, increasingly rising healthcare costs, without corresponding improvements in health, are financially unsustainable for federal health insurance programs such as Medicare (Fisher, Bynum, & Skinner, 2009). More integrated, team-based care, supported by financial incentive for care collaboration and coordination, could serve as this necessary change (Fisher, Bynum, & Skinner, 2009). One of the key goals of this integrated care, which has been argued to be the most important approach for reducing healthcare spending, is to focus on reducing the growing obesity epidemic through efforts to promote healthy diet and physical activity (Thorpe, 2005). A 2001 literature review suggested that health promotion programs result in an average savings of nearly four dollars for every dollar invested (Aldana, 2001). This shift to more integrated care has clear cost savings and health promotion potential, but we must advocate for this vision to become a reality.

Existing reviews of efforts to improve diet and physical activity suggest that more intensive interventions/interventions using multiple approaches are more effective (Artinian et al, 2010; Harland, White, Drinkwater, Chinn, Farr, & Howel, 1999). Primary care providers play a role in promoting healthy lifestyles, but their success will be heightened if this role is integrated

with other providers and health educators who can complement and supplement initial efforts to support behavior change (Lin, O'Connor, Whitlock, & Beil, 2010). Influencing diet and physical activity behaviors will always be complex, but to realize the health and quality of life potential of older adults *and* to improve the stability of U.S. healthcare system, hopefully we can encourage healthcare reform that values integrated, team-based care and supports patient health behavior change.

Appendix A: Sociodemographic Questionnaire

Participant Number: _____

1. Age: _____
2. Sex: _____
3. Ethnicity:
___ Hispanic or Latino
___ Not Hispanic or Latino
4. Race:
___ American Indian or Alaska Native
___ Asian
___ Black or African American
___ Native Hawaiian or Other Pacific Islander
___ White
___ Other
5. Educational Attainment:
___ Less than high school
___ Some high school
___ High school graduate or GED
___ Some college/AA degree/Technical School training
___ College graduate (BA or BS)
___ Graduate school degree (Master's or Doctorate)
6. Subjective Financial Status:
___ More than enough to get by
___ Just enough to get by
___ Struggle to get by
7. Income - How would you describe your household's income?
___ Below \$10,000
___ \$10,000-\$15,000
___ \$15,001-\$20,000
___ \$20,001-\$25,000
___ \$25,001-\$30,000
___ \$30,001-\$35,000
___ \$35,001-\$40,000
___ \$40,001-\$45,000
___ \$45,001-\$50,000
___ Above \$50,000

8. Marital Status:
☐ Married/Partnered
☐ Separated/Divorced
☐ Widowed
☐ Single, Never Married
☐ Other
9. Please list all chronic health conditions:
☐ Arthritis
☐ Cancer
☐ Depression
☐ Diabetes
☐ Heart disease
☐ High blood pressure
☐ Hypertension
☐ Osteoporosis
☐ Other chronic diseases (please list): _____
10. Overall, how would you rate your health?
☐ Very Poor
☐ Poor
☐ Fair
☐ Good
☐ Very Good
☐ Excellent
11. Height
____ feet ____ inches
12. Weight
____ pounds
13. Was anyone else with you (e.g. family member, friend, etc.) during your appointment?
☐ Yes
☐ No
14. How many times have you seen this provider in the past year? _____
15. How long have you been seeing this provider (probe for number of years or year when started seeing this provider)? _____
16. Was diet or physical activity discussed during the visit you just had?
☐ No, neither behavior was mentioned
☐ Yes, just diet
☐ Yes, just physical activity
☐ Yes, both diet and physical activity

17. On a scale of 1 to 10 with 1 being don't remember anything that was said and 10 being remember everything that was said, how much of the conversation that just took place in your visit do you remember? _____
18. In your past visits to this provider, have you ever discussed diet?
☐ No
☐ Yes, within the past year
☐ Yes, more than one year ago
19. In your past visits to this provider, have you ever discussed physical activity?
☐ No
☐ Yes, within the past year
☐ Yes, more than one year ago
20. Have other providers discussed diet and or physical activity with you in the past?
☐ No, neither behavior has been mentioned
☐ Yes, just diet
☐ Yes, just physical activity
☐ Yes, both diet and physical activity
21. How motivated are you to make changes related to your diet
☐ Not at all
☐ Only a little
☐ Somewhat
☐ Very
22. How true of you is it that in the next month you have a specific plan to eat better?
☐ Not at all
☐ Only a little
☐ Somewhat
☐ Very
23. How motivated are you to make changes related to your physical activity?
☐ Not at all
☐ Only a little
☐ Somewhat
☐ Very
24. How true of you is it that in the next month you have a specific plan to increase your activity?
☐ Not at all
☐ Only a little
☐ Somewhat
☐ Very

Appendix B: Dietary Assessment

Participant Number: _____

Fruit and Vegetable Consumption Assessment

These questions are about the foods you usually eat or drink. Please tell me how often you eat or drink each one, for example, twice a week, three times a month, and so forth.

- 1) How often do you drink fruit juices such as orange, grapefruit, or tomato?
- 2) Not counting juice, how often do you eat fruit?
- 3) How often do you eat green salad?
- 4) How often do you eat potatoes, not including French fries, fried potatoes, or potato chips?
- 5) How often do you eat carrots?
- 6) Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat?

(Example: a serving of vegetables at both lunch and dinner would be two servings.).

(Scoring: Total daily fruit consumption will be calculated based on responses to questions 1 and 2, and total daily vegetable consumption will be based on questions 3-6 (note: the answer to question 6 will be treated as times per day).)

**Appendix C: Physical Activity Assessment:
3 -Item Godin Leisure-Time Exercise Questionnaire**

Participant Number: _____

1. During a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

Times Per Week

a) STRENUOUS EXERCISE (HEART BEATS RAPIDLY) _____

(e.g., running, jogging, vigorous swimming, vigorous long distance bicycling)

b) MODERATE EXERCISE (NOT EXHAUSTING) _____

(e.g., fast walking, easy bicycling, easy swimming, popular and folk dancing)

c) MILD EXERCISE (MINIMAL EFFORT) _____

(e.g., yoga, fishing from river bank, bowling, horseshoes, golf, easy walking)

Scoring- For the first question, weekly frequencies of strenuous, moderate, and light activities are multiplied by nine, five, and three, respectively. Total weekly leisure activity is calculated in arbitrary units by summing the products of the separate components, as shown in the following formula: Weekly leisure activity score = $(9 \times \text{Strenuous}) + (5 \times \text{Moderate}) + (3 \times \text{Light})$

Appendix D: Patient Post-Visit Semi-Structured Interview Guide

- 1) What was the focus of your most recent visit?
- 2) Were healthy diet or physical activity mentioned at all? *Probe - How were diet and physical activity discussed? Probe for as much detail as possible regarding what patient remembers pertaining to these two areas. Probe with items a-k if information not already provided by participant.*
 - a. Who discussed these behaviors? (physician, nurse, office staff, residents, medical students, and/or family members)?
 - b. How much time was spent talking about these behaviors?
 - c. Why do you think your provider discussed these recommendations? *Probe for any rationale for the behavior(s) that was provided (Autonomy-related)*
 - d. Were any goals set for behavior changes you may make (e.g. to eat better/be more active)? *Probe: If so, what were they? (Autonomy-related)*
 - e. Were any benefits of engaging in these behaviors mentioned? *Probe: What benefits were mentioned? (Autonomy-related)*
 - f. How insistent or enthusiastic did your provider seem about his/her recommendation(s)? *(Autonomy-related)*
 - g. What was the tone of the discussion? *Probe: E.g. threatening, blasé, etc? (Autonomy/Relatedness-related)*
 - h. Were diet or physical activity discussed in relation to any of your other health conditions? *Probe: e.g. how these behaviors may help existing conditions or how to engage in these behaviors in light of existing conditions? (Autonomy-related)*
 - i. Were any resources recommended for making these changes? *(Competence-related)*
 - j. Were any materials provided (pamphlets, group referrals, etc) during the clinical encounter? *(Competence-related)*
 - k. Were specific steps for initiating these behaviors discussed? *(Competence-related)*
- 3) How do you believe the discussion of these behaviors that just took place will influence or fail to influence your engagement in these behaviors?
 - a. How did the content or nature of the recommendations influence your receptivity to the suggested behaviors? *Probe – was there anything specifically that was said or the way in which anything was said that particularly resonated with you?*
 - b. How important do you believe these behaviors are? *(Autonomy-related)*
 - c. How confident are you that you could change these behaviors if you wanted to? *(Competence-related)? Probe- was there anything your provider said that influenced your confidence level?*
 - d. Can you explain why the recommendation can be dismissed? *[If the recommendation was not influential]*
 - e. Are there any other factors that may influence your likelihood of making a behavioral change at this time? *Probe for recent life events, past attempts at making changes, social influences, etc.*

- 4) To what extent do you follow your provider's other recommendations? (*Relatedness questions*)
- a. To what extent do you feel you have a connection with this provider? *Probe – does this sense of connection influence your likelihood of adhering to recommendations?*
 - b. To what extent do you trust this provider?
 - c. To what extent do you feel supported by this provider?
- 5) How would you rate the overall quality of care you received today, from 1 being completely awful to 10 being completely wonderful? *Explain response*
- 6) If no discussion of diet or physical activity, did your provider make any health recommendations or suggestions today? If so, can you tell me about one of those recommendations?
- 7) Any other thoughts?

Appendix E: Final Codebook

Purpose: To explore patient perceptions of how diet and physical activity recommendations influence engagement in health behaviors.

1. Discussion recalled
 - a. Who brought it up?
 - i. Provider
 - ii. Patient
 - b. Provider assessment of how patient is doing in regard to diet/pa
 - i. Positive assessment (Doing okay, perfect)
 - ii. Based on lab value
 - iii. Negative assessment/provider acknowledges need for change (if acknowledges need for change and also provides some suggestion for what that change should be then also code 1f- recommendations/advice recalled)
 - c. Content of discussion
 - i. Questions about patient behavior/shared patient behavior
 - ii. Patient expressed concern
 1. Functional concerns: slowed down, breathing trouble
 - iii. Positive tone/encouragement provided (for recent or planned changes)
 - iv. Reasons/context for discussions?
 1. No
 - a. Not in context of conditions/values (e.g. sugar, blood pressure)
 - i. but have discussed in this context previously
 2. Yes
 - a. In context of conditions/values (e.g. sugar, blood pressure)
 - b. In context of weight gain
 - v. Benefits discussed
 1. Yes
 2. No
 3. Do not remember/uncertain
 - vi. Plans
 1. Testing
 2. Changes already underway
 3. No specific plans
 - vii. Goals
 1. Yes
 - a. Maintain current activity
 - b. Improve current activity
 2. no

- d. Visit focus
 - i. Functional concerns: breathing, sleeping, fatigue, pain
 - ii. Health conditions: diabetes, kidney function
 - iii. Routine checkup/follow-up
 - e. Time estimate
 - i. Percent estimated
 - ii. Vague estimate
 - 1. Most
 - 2. Limited
 - iii. Specific time indicated (e.g. 3-4 minutes)
 - iv. Patient does not know
 - f. Recommendations /advice recalled
 - i. No
 - 1. Presumed familiarity (explanation for why behavior was not discussed)
 - 2. Patient indicates provider knows patient is aware of importance of behavior
 - 3. Poor health reported as reason why behavior is not discussed
 - ii. Yes
 - 1. Will follow recommendations
 - a. Because patient concerned
 - b. Because of relationship with doctor (like, trust)
 - c. Try to follow all recs
 - d. Due to health condition
 - 2. Unlikely to follow recs
 - 3. Recs no influence
 - a. Patient already made decision
2. Awareness of Need
- a. Patient seems aware of importance of diet/p.a.
 - i. Self-assessment involves recognition of need for changes
 - ii. Conditions influence why behavior is viewed as important/perceived need for change
 - iii. Perceived need for change is more apparent due to seeing others with condition and poor outcomes when not taking care of self
 - iv. View behavior as extremely or very important
 - v. Patient provides another explanation why behavior is important
 - b. Patient reports knowing what need to do and just a matter of actually doing it
 - c. Does not view behavior as important

3. Confidence in ability to make changes
 - a. Confidence level
 - i. Very confident
 - ii. Somewhat confident
 - iii. Uncertain regarding ability to make changes
 - iv. Pessimistic about ability to make changes
 - b. Factors influencing confidence level
 - i. Required changes small
 - ii. Confident because highly motivated (e.g. determined)
 - iii. Success with past attempts/history of activity
 - iv. Past failures/lack of impact
 - v. Health conditions/health status
 - vi. Lacking specifics/too vague (e.g. patient reports provider saying need to lose weight, but not talking about specifics of how to do so)
 - vii. Actionable plan
 - viii. Provider can alleviate concerns (e.g. address potential barriers/concerns)
 - ix. Encouragement (encouragement supports confidence to move ahead , reassurance doing right thing)
 - x. Perception that change would be too strict/limiting
4. Motivation/Impetus for Change (this can be used for current motivations and explanations of past motivations)
 - a. Patient motivated to change
 - i. Health diagnosis (e.g. cancer, diabetes)
 - ii. Lab values
 - iii. Functional concerns (e.g. breathing difficulties)
 - iv. Health decline
 - v. Weight
 - vi. To avoid medication
 - vii. Motivated by having a plan/idea for implementation (e.g. patient references idea for how to be active as explanation for motivation)
 - viii. Can see personal benefit, consistency with goals
 - ix. Measureable benefits (evidence of change is motivating)
 - x. Want to get back in habit of healthier behavior
 - xi. Life events can serve as opportunities for changes (e.g. retirement, upcoming visit with grandkids)
 - xii. Provider can help patient with impetus to change
 - xiii. Motivated but no plans
 - xiv. Change already in progress
 - b. Patient only somewhat motivated

- c. No current motivation to change
 - i. Positive self-assessment- /doesn't perceive need for change/has already made changes
 - ii. No recommendations perceived as no need/continue with what currently doing (Patient assumes provider would bring up behavior if issue)
 - iii. Maintenance is only goal
 - iv. Negative perceptions of old age may demotivate (e.g. some say doing well "for an old man" as explanation for why don't need to do more/better)
 - v. Checklists (sometimes health behavior questions are perceived as to be for doctors records, part of what they have to ask, and not so much for benefit of patient)
5. A Variety of Factors influence current behaviors
- a. Finances
 - b. Family or friends
 - c. Impacted by holidays
 - d. Convenient options / Business/schedule
 - e. Weather
 - f. Perceived safety
 - g. Insurance
 - h. Other priorities
 - i. Health conscientiousness/conditions
 - i. Diet impact by teeth/chewing ability
 - ii. Health conditions make PA challenging
 - iii. In good health
 - j. Enjoyment of activity (e.g. "I just enjoy doing it")
 - k. Behavior has become a habit
 - l. No plan (so even with motivation may not make changes)

6. Relationship with doctor
 - a. Positive
 - i. “Knows me” (feels like the provider has a good sense of them as a person, knows their behaviors, values, etc.)
 - ii. Duration of seeing provider
 - iii. Comfortable/Pleasant
 - iv. Support
 - v. Trust/Competence/Confidence/faith in doctor (trusts the provider’s judgment/that they make good decisions)
 - vi. Attentive/responsive (notices details, listens to patient well)
 - vii. Efficient
 - viii. Caring (feels like provider has patient’s best interests at heart, truly cares for them)
 - b. Negative
 - i. Rushed
 - ii. Doesn’t explain things
 - iii. Treatment focused
 - c. New doctor - no relationship yet
 - d. Influences desire to follow recommendations

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Professional positions held:

RESEARCH EXPERIENCE

Graduate Assistant, University of Kentucky, Behavioral Science, Lexington, KY 2008 - 2011

Research Assistant, University of Kentucky, Graduate Center for Gerontology, Lexington, KY 2010 - 2011

Research Assistant, University of Kentucky, College of Health Sciences, Lexington, KY 2008 – 2010

Evening Manager, American Cancer Society Hope Lodge, Lexington, KY 2008 - 2009

Research Data Analyst, Boston Medical Center, Boston, MA 2006 – 2007

Teacher, Adath Israel, Middletown, CT 2005 - 2006

Research Assistant, Institute of Living, Hartford Hospital, Hartford, CT 2004 - 2006

Research Assistant, Yale University, New Haven, CT 2006

Psychology Liaison, Biology of Aging, Wesleyan University Middletown, CT 2006

Research Assistant, Primary Care Center, Yale University, New Haven, CT 2005

Teaching Assistant, Psychological Statistics, Wesleyan University Middletown, CT 2005

Residential Advisor, Wesleyan University, Middletown, CT 2005; 2002

Teaching Assistant, Foundations of Contemporary Psych, Wesleyan University, Middletown, CT 2004

Research Assistant, Institute on Aging, University of Pennsylvania, Philadelphia, PA 2004

Research Assistant, Mood and Anxiety Clinic, University of Pennsylvania, Philadelphia, PA 2003

Scholastic and professional honors:

Clinical and Translational Science Program T-32 Predoctoral Scholar Awardee	2011 –2013
University of Kentucky, National Institutes of Health	
Donovan Scholarship in Gerontology, University of Kentucky	2010 - 2013
Outstanding Presentation Award, 2013 College of Public Health Research Day,	April 2013
University of Kentucky	
Top Student Research Presentation Award, DCHC conference, Fairfax, VA	March 2013
University of Kentucky Graduate School \$400 Travel Award (4 time recipient)	2009 - 2012
Emerging Scholar and Professional Organization Poster Award Winner,	Nov. 2011
Gerontological Society of America, Boston, MA	
RAND Summer Institute Scholarship, RAND Corporation	Summer 2011
Presidential Fellowship, University of Kentucky	Summer 2011
Student Government Association Childcare Grant, University of Kentucky	2010, 2011
2010 National Clarion Interprofessional Case Competition	Spring 2010
Local competition winner, Lexington, KY	
Placed 2nd nationally, Minneapolis, MN	
Team awarded \$5000 Premier Richard Norling Scholarship	
Kentucky Graduate Scholarship	2008 - 2011
TORA/Dean's Scholarship, University of Kentucky	2009 - 2011
Hughes Program in Life Science \$5000 stipend, Wesleyan University	2005 - 2006

Peer-reviewed publications:

Schoenberg, N.E., **Bardach, S.**, Kruger, T., Howell, B. Appalachian women's perspectives on breast and cervical cancer screening. *Remote and Rural Health*. In Press

Schoenberg, N. E., Howell, B. M., Swanson, M., Grosh, C., & **Bardach, S.** (2013). Perspectives on healthy eating among Appalachian residents. *The Journal of Rural Health*, In Press.
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- Bardach, S.H.** & Rowles, G.D (2012). Geriatric education in the health professions: Are we making progress? *The Gerontologist*, 52(5), 607-618. doi: 10.1093/geront/gns006.
- Bardach, S.H.**, Schoenberg, N.E., Fleming, S.T., Hatcher, J (2012). The relationship between colorectal cancer screening adherence and knowledge among vulnerable rural residents of Appalachian Kentucky. *Cancer Nursing*, 35(4), 288-294.
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- Schoenberg, N.E., **Bardach, S.H.**, Manchikanti, K.N., Goodenow, A.C (2011). Appalachian residents' experiences with and management of multiple morbidity, *Qualitative Health Research*, 21(5), 601- 611.
- Swanson, M., Studts, C.R., **Bardach, S.H.**, Bersamin, A., Schoenberg, N.E. (2011). Intergenerational energy balance interventions: A systematic literature review, *Health Education & Behavior*, 38, 171-197. doi: 10.1177/1090198110378973
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- Bardach, S. H.**, Gayer, C.C., Clinkinbeard, T., Zanjani, F., Watkins, J.F. (2010). Using a positive aging intervention to explore the malleability of possible selves and expectations regarding aging, *Educational Gerontology*, 36(5), 407-424.
- UyBico, S., **Pavel, S.**, Gross, C (2007). Recruiting vulnerable populations into research: A systematic review of recruitment interventions, *Journal of General Internal Medicine*, 22(6), 852-863.
- Pavel, S** (2006). Interaction between international and American college students: An exploratory study, *Mind Matters: The Wesleyan Journal of Psychology*, 1, 39-55.

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Professional positions held:

RESEARCH EXPERIENCE

Graduate Assistant, University of Kentucky, Behavioral Science, Lexington, KY 2008 - 2011

Research Assistant, University of Kentucky, Graduate Center for Gerontology, Lexington, KY 2010 - 2011

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Evening Manager, American Cancer Society Hope Lodge, Lexington, KY 2008 - 2009

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Research Assistant, Yale University, New Haven, CT 2006

Psychology Liaison, Biology of Aging, Wesleyan University Middletown, CT 2006

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Teaching Assistant, Psychological Statistics, Wesleyan University Middletown, CT 2005

Residential Advisor, Wesleyan University, Middletown, CT 2005; 2002

Teaching Assistant, Foundations of Contemporary Psych, Wesleyan University, Middletown, CT 2004

Research Assistant, Institute on Aging, University of Pennsylvania, Philadelphia, PA 2004

Research Assistant, Mood and Anxiety Clinic, University of Pennsylvania, Philadelphia, PA 2003

Scholastic and professional honors:

Clinical and Translational Science Program T-32 Predoctoral Scholar Awardee	2011 –2013
University of Kentucky, National Institutes of Health	
Donovan Scholarship in Gerontology, University of Kentucky	2010 - 2013
Outstanding Presentation Award, 2013 College of Public Health Research Day,	April 2013
University of Kentucky	
Top Student Research Presentation Award, DCHC conference, Fairfax, VA	March 2013
University of Kentucky Graduate School \$400 Travel Award (4 time recipient)	2009 - 2012
Emerging Scholar and Professional Organization Poster Award Winner,	Nov. 2011
Gerontological Society of America, Boston, MA	
RAND Summer Institute Scholarship, RAND Corporation	Summer 2011
Presidential Fellowship, University of Kentucky	Summer 2011
Student Government Association Childcare Grant, University of Kentucky	2010, 2011
2010 National Clarion Interprofessional Case Competition	Spring 2010
Local competition winner, Lexington, KY	
Placed 2nd nationally, Minneapolis, MN	
Team awarded \$5000 Premier Richard Norling Scholarship	
Kentucky Graduate Scholarship	2008 - 2011
TORA/Dean's Scholarship, University of Kentucky	2009 - 2011
Hughes Program in Life Science \$5000 stipend, Wesleyan University	2005 - 2006

Peer-reviewed publications:

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