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DISSERTATION

EVALUATION OF MOTIVATIONS THAT INFLUENCE CONSUMER ATTITUDES AND BEHAVIOR WHEN PURCHASING LOCAL FOODS

Submitted by

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

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Fort Collins, CO

Fall 2009

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY GRETCHEN NURSE ENTITLED EVALUATION OF MOTIVATIONS THAT INFLUENCE CONSUMER ATTITUDES AND BEHAVIOR WHEN PURCHASING LOCAL FOODS BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

EVALUATION OF MOTIVATIONS THAT INFLUENCE CONSUMER ATTITUDES AND BEHAVIOR WHEN PURCHASING LOCAL FOODS

In an increasingly complex and differentiated food system, the local food movement appears to be gaining momentum. This increased attention to the sustainable food movement highlights both the public and private benefits to eating local food, propelling the "local food" movement into the public eye as an important attribute in one's food consumption. Research suggests that positive attitudes towards locally grown food might not necessarily result in purchasing locally grown food. Although primary motivators for consumer food purchases remain to be price, quality, convenience, and brand familiarity, there seem to be other factors that are influencing the decision criteria for some consumers. This project used an expanded Theory of Planned Behavior (TPB) model as a framework to examine different motivators or predictors of behavioral intention, source of produce purchase, and willingness to pay for local food.

Three studies utilized different methods and samples. In a sample of Introductory Psychology students (n=218) using a comprehensive paper survey, consumer confidence; attitudes; social norms; and perceived consumer effectiveness (PCE) and product availability (both forms of perceived behavioral control) played a significant role in understanding consumer purchase motivations. In a nationwide internet survey (n=1269) the TPB model--including attitudes, social norms, and PCE--proved a good framework to

predict who would be purchasers of produce from direct sources (grower, farmers market) as well as willingness to pay for local produce. Also, actual local tomato purchases by an in-store sample (n=72) of consumers found that 92 percent purchased local and that consumer confidence and social norms were correlated with purchases.

All of the factors in the expanded TPB model were significant predictors of a behavioral outcome regarding local produce in at least one study. Taking these factors into account should improve the effectiveness of marketing campaigns designed to increase support of the local food system.

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CHAPTER ONE

INTRODUCTION

In an increasingly complex food system, the local food movement appears to be gaining momentum as national media dub, "Local" the new "Organic". Locavore was designated as the word of the year in 2007 by the New Oxford American Dictionary, thereby creating an identity for consumers who prefer locally grown food products (Spector, 2008). This increased attention to the sustainable food movement raises curiosity about the perceived public and private benefits to eating local food.

Zepeda and Leviten-Reid (2004) found that only positive attitudes existed toward local foods among consumers, indicating support for the local economy and environment. Two additional studies (Pirog, 2004; Pirog & Benjamin, 2005) also found that, when holding everything else constant, consumers are generally interested in buying locally grown food. These positive attitudes help to explain the significant growth in direct market interaction with the consumer. In 2008, there were 4,685 U.S. farmers markets, double the number there were a decade earlier (http://www.ams.usda.gov/farmersmarkts/). This growth in farmers markets as well as Community Supported Agriculture (CSA; Zepeda & Li, 2006) demonstrates a growing trend in consumer demand for locally grown foods. A CSA is an arrangement between farmers and consumers that allows consumers to support the local farmer by buying either a share of or a subscription to the agricultural products for a certain amount of

time. Often times this allows the farmer to share some of the risks associated with crop production while meeting consumer demand for quality fresh food (Lobo & Takele, 2003). CSAs could be considered an extension of farmers markets allowing consumers to have an even closer link with the source of their food.

Despite changing consumer awareness, initiatives such as sustainable organic food have a market share of only about 3% (Fromartz, 2009). Vermeir and Verbeke (2006) claim that is in part due to the attitude-behavior gap that is currently present in the consumer behavior literature. Attitudes alone are poor predictors of behavioral intentions in the marketplace (Ajzen, 2001; Kraus, 1995). For example, positive attitudes or a willingness to pay for sustainable food products, such as organic, are not necessarily followed by positive behavioral intentions (Ajzen & Fishbein, 1974; Thompson & Kidwell, 1998). These findings suggest that positive attitudes towards locally grown food might not necessarily result in purchasing locally grown food.

Many behavioral theories in psychology focus on the underlying attitude formation and how it is related to behavior. One of the theories used to explore food choice behavior is the Theory of Planned Behavior (TPB), an extension of the Theory of Reasoned Action (TRA) formulated by Fishbein and Ajzen (1975). The TRA assumes that positive attitudes lead to positive behavioral intentions, but Fishbein and Ajzen (1975) found that this might not be the case. Positive attitudes toward buying sustainable food products are not necessarily followed by positive intentions (Vermeir & Verbeke, 2006). The TPB uses one's attitudes, social norms, and perceived behavioral control to predict behavior intentions. For example, Robinson and Smith (2002) found that the TPB was a good model to predict behavior intention related to purchasing sustainable food

because of the inclusion of other psychosocial variables. Therefore, psychosocial variables, such as perceived behavioral control, have been shown to be better predictors than demographic or attitudinal variables alone (Sparks & Shepard, 1992).

Many empirical studies in the environmental behavior literature have also found irregularity in the relationship between attitudes and behavior toward the environment (Follows & Jobber, 2000; Laroche et al., 2001; Straughan & Roberts, 1999). The unpredictability of consumer behaviors through attitude formation has allowed other behavior models to suggest determinants that might also be involved. This attitude-behavior gap is addressed in Jager's (2000) consumer behavior model suggesting that there are situational and individual determinants that are influencing consumers' attitudes and thus behavioral intentions. The three main determinants in this model are values, needs, and motivations; information and knowledge; and behavioral control.

Despite past research focusing on sustainable food products, there is still a lack of clarity about perceptions of local foods, connections to buying behavior, and motivations behind local food purchases. Although primary motivators for consumer food purchases are still price, quality, convenience, and brand familiarity, there seem to be other factors that are influencing the decision criteria by a minority of consumers (Weatherall et al., 2003). In order to understand the possible motivations behind local food purchases it is important to identify determinants that might help to bridge the attitude-behavior gap. Accordingly, this project examines individual and situational determinants that might affect attitudes, behavioral intention, and behaviors regarding purchase of local foods, primarily focusing on the predictors in the TPB model. Three empirical studies herein help to identify and define the determinants that could help further research in this area. It

is important to note that the relationship between attitudes affecting behavior is explored in these studies, but there might also be a reciprocal relationship with behavior in turn affecting variables in the TPB model that is beyond the scope of these studies. The following sections will review the who, what, when, where and why of local food phenomena.

Who Are the Locavores?

Demographically, there has been some research that aims to characterize local-food shoppers, now termed locavores. Govindasamy, Italia, and Adelja (2002) identified such shoppers as predominantly female, college educated, and with an above-average income. Roberts (1996) looked at sustainable food consumers and found that they had a specific profile defined as a middle-aged person, higher income, and an above average education. Despite this clear demographic delineation there are other researchers who found contrary findings. Kolodinsky and Pelch (1997) found income to be unrelated to local food purchasing and Onianwa, Wheelock, and Mojica (2005) found similar results for a random sample of Alabama consumers buying direct from farmers. Education was also found to be negatively related to local food shopping (Jekanowski, Williams & Schiek, 2000).

Zepeda and Li (2006) stated that demographics act as poor predictors of consumer preference. Due to discrepancies in the previously reported findings, it may be more logical to focus on attitudinal and behavioral variables that could better predict local food consumption. Attitudinal variables reflecting public and private benefits, such as environmental concern, health, and support of the local economy, have been found to

predict behavior better than demographics alone (Lockeretz, 1986; Zepeda & Leviten-Reid, 2004). In addition, Robinson and Smith (2002) found that attitudes, subjective norms, and beliefs predict behavioral intention to purchase sustainable food products. Behavioral variables have been less explored in this literature.

The local food movement has arrived at some level of notoriety considering that there is now a word that describes a consumer who eats locally produced food (locavore). This suggests that a discourse has been developed around local food that allows more dialogue and attention to the topic. Despite this official identifier of a locally grown food consumer, there is still some discrepancy in who these consumers are and what the possible motivations are behind their purchases.

What Is The Term "Local" Defined By?

There are no set standards defining the attribute "local" for a food product. Pirog (2004) reported that consumers vary on their definition of what "local" means, suggesting that consumers often have their own interpretation of what it means ranging from distance from home, region where it was produced, state where it was produced, or even customs that influence the food culture of people from certain backgrounds (Tregear et al., 1998).

In a recent report entitled, "Consumer Understanding of Buying Local," The Hartman Group (2008) finds that consumers interpret the "localness" of a product relative to where they live. For half of the consumers surveyed, local was defined by a product made or produced within 100 miles of their home. Zepeda and Li (2006) report similar findings, but identify customers further by stating that 30 percent surveyed defined the

range to be food grown within 25 miles, while 20 percent defined the range being within 100 miles. Most consumers in their nationwide sample define local in terms of driving time (Zepeda & Li, 2006). Since driving time is the most common definition, it is argued that state labeling would not be enough to discriminate true "local" foods. In summary, the "local" claim seems to be multifaceted, meaning different things to different consumers, further supporting the need to investigate consumer attitudes and behavior specific to that claim.

When Are They Buying Local?

Local food products have the reputation of being a great supplement to one's grocery list in the summertime when fruits and vegetables are ripe. Therefore, the seasonality of local food products in temperate climates seems to be one of the primary perceived barriers to increased purchase behavior. Primarily, consumers are buying local food products from the farmers markets, where a level of convenience has been introduced encouraging more direct sales from the farmer to the customer. The seasonality of farmers markets tends to dictate when consumers are buying local, drawing most of their customers in late summer and early fall. The food culture is shifting as quantity and popularity is increasing in the summer months, but there is an inherent barrier to purchasing local food due to its seasonality.

In addition, conventional shoppers do not actively search for "locally produced" products at the store (Zepeda & Leviten-Reid, 2004). Although consumers do not seem to seek out locally sourced products, they are apt to buy them if available and labeled. The lack of consumer awareness of market sources outside of the farmers market venue may

influence when consumers are buying local food products. For example, Cloud (2007) states that seasonal and climate variation insinuate that it is not realistic for consumers to obtain all their food from local sources. The primary marketplaces associated with providing the customer with the opportunity to buy local food products are most often seasonal, but there are other products that are not seasonally dependent that other sources are starting to carry throughout the year. It is important to recognize that there are some seasonality issues associated with local food products or a possible low perceived availability on the consumer level. Understanding the influence on perceived availability on shopping behavior is a relationship addressed in this project.

Where Are They Shopping?

More and more competing sources of locally produced food are emerging. For example, local food consumers may be drawn to farmers markets or Community Supported Agriculture (CSA) programs. Vendors at farmers markets are often restricted from selling products outside of their own geographic region as well as products that they were not involved in producing (Zepeda & Li, 2006). Participation in farmers markets has grown rapidly. Payne (2002) reports that in the United States they served nearly 2.8 million customers. Similarly, CSAs are growing in size as well, with over 1,138 in 2006 (Lass et al., 2003). These venues have been more successful as a means of promoting local products (Zepeda & Leviten-Reid, 2004). Increased popularity might be due to consumer awareness of food attributes acting as an outlet for possible consumer activism.

Retail outlets are also becoming aware of increasing consumer demand in the local food movement. "Local" labels and state campaigns such as "Colorado Proud" and

"Minnesota Grown" are growing in popularity (Jekanowski et al., 2000). For example, Lunds Food Holding Inc. launched an "Eat Local" campaign in 2008 and had record sales. The produce manager, Rick Stigerwald, stated that it was a huge success (February 18, 2008). Although marketing local food items at the retail level is becoming more prevalent, there are some factors that have not been solved to make the local food system more successful in retail outlets. Guptill and Wilkins (2002) investigated some of the trends and implications for local foods in a more corporate food environment. Operational issues involved with supplying larger chains, price competitiveness, and lack of retail-friendly packaging were found to be some of the major roadblocks in growing that category.

Why: What Are the Possible Motivations?

Every human has to eat to survive, and thus we are all consumers of some type of food. This behavior is initiated by some form of need. Maslow's hierarchy of needs would suggest that shopping for food fulfills the most basic physiological need (Maslow, 1970). Whereas Maslow based consumption on one basic need, Bayton (1958) claims a common pitfall of psychologists is to think of motivations behind a behavior as based on only one need. He argues that most individuals are driven to consume by a combination of needs--for example, true needs and ego-based needs. This theory suggests that different consumers can have different motivations and a variety of motivations behind buying a product. Therefore, some consumers could buy a product to fulfill a true need, such as food for energy to survive, and in conjunction be fulfilling a more ego-based need, such as buying the most popular brand available. The research on motivations

behind consumer behavior suggests that there are many factors at play when trying to analyze consumer goals (Zaichkowsky, 1985).

Understanding the motivations underlying eating behaviors and food choices among consumers has become very important. Carrigan & Attalla (2001) argue that current consumption trends are shifting due to the evolving food market. For example, products that are currently available in western supermarkets were not available 20 years ago. Product differentiation as well as the shear amount of available products per category can suggest that a more diverse set of motivations is increasingly necessary to make a decision at the supermarket. Currently, there are over 20,000 different unique product codes (UPCs) in any given grocery store, ranging from 500 sq ft (e.g., storefront shop) to 30,000 sq ft (e.g., Walmart). Therefore, there are many different products, with different claims and attributes associated with them, for each consumer to choose from. Lewin et al. (1944) offer a motivational model that suggests people choose foods on the basis that eating these foods will bring about consequences they desire. A need will be fulfilled by their food choice--for example, the food will taste good and satiate their hunger. These are perceived as direct benefits to the consumer. Each consumer perceives his or her own set of direct benefits.

Motivations have therefore become more complex and more diverse as our consumptive patterns broaden. Seyfang (2006) suggests that the growing interest in a localized food supply is related to a changing motivation toward sustainable consumption. What is driving this motivation change? Dobsha and Ozanne (2001) suggest that consumers switch between "citizens-as-consumers" benefiting from private

amenities and "citizens-as-conservers" doing their part to be environmentally friendly consumers. What role are consumers assuming when purchasing locally grown food?

Re-evaluating consumption motivations is needed with the increasing consumer demand for local food. It has been shown that 80% of consumers questioned in a nationwide survey had purchased locally grown produce (Thilmany & Thomas, 2009). In the current project, the motive for this behavior will be investigated as either related to a private or public benefit. If it fulfills a need that benefits the individual consumer, such as low price or taste or health, it is termed a direct or *private benefit*. A motive that is based on a benefit beyond the individual--such as sustainable environment, fair trade, or local economy--is termed an indirect or *public benefit*.

Private Benefits

Consumer motivation to purchase locally grown food could be explained in a more egocentric manner: the "good for me" purchase driver that generally encompasses many diverse health concerns. Although health issues such as weight, allergies, and illness might dominate the motivation to buy local, quality and taste have also been addressed as purchase triggers (Hartman Group, 2008). In fact, Zepeda and Li (2006) found that only consumer enjoyment of cooking significantly increased the probability of buying local food, and by 50 percent. Other possible motivations such as energy, nutrition and fair price were not significant. This suggests that food quality, a private benefit, might be a driving factor in the purchase of locally grown foods.

Public Benefits

Diversification in consumer motivations has allowed room to respond to basic needs, such as food, in a more sustainable way. Seyfang (2006) states that individuals are

becoming more consumer savvy in using their money to make a public statement of activism or to show their support. Sustainable consumption is one way in which consumers can drive market demand in order to support various causes they categorize as public goods. Public goods are defined as resources that have value that might not be defined by the economic market. Briceno and Stagl (2006 p.1544) agree when they state that, "a socially aware approach to consumption requires an evaluation of needs and goals as defined through collective ideas and visions." Therefore, sustainable consumption is based on a decision-making process that takes the collective good into account along with individual needs.

Vermeir and Verbeke (2006) further define sustainable consumption as having two other components in addition to the environment: economic and social. For example, the economic element would address fair pricing to agricultural producers and consumers, and the social component would incorporate a cultural need in relation to agriculture. Four possible attributes associated with local food products can be considered different dimensions of public goods. These dimensions--environment, economy, social fairness, and social responsibility--will be explored in this project as various determinants that motivate alternative food purchases.

Environment. Current research suggests that the link between eating locally and protecting the environment explains one of the major consumer motivations to purchase local products (Seyfang, 2006). Brown (2003) characterized local food shoppers as also being members of an environmental group. This motivation identifies a set of consumers who are interested in supporting a public good. This ecological focus introduces a different kind of consumer ethic that is focused away from the individual private good

into an alternative consumption framework based on a more ecocentric value structure. Ecocentrism is an ethic that provides ecosystems with value in their own right, independent of their value to humans (Bell, Greene, Fisher, & Baum, 2001). Two different concepts have been introduced to explain the environmental impact of our food system on global climate change. The concepts have been coined in an effort to make consumers more aware of their purchases. Specifically, "carbon footprint" and "food miles" have been explicitly linked with our food system and the influence of our food behaviors as a culture.

Carbon footprint can be defined as a measure of the amount of carbon dioxide (a greenhouse gas) released into the atmosphere due to human activity. Every person's day to day activity, from driving a car to flying across the country, places a certain amount of carbon into the atmosphere. Predominantly, this term has been associated with transportation, but that is not the only factor contributing to carbon emissions in our complex food system. A contributing factor to carbon emissions is anything that is generated by the use of fossil fuel, which in the food production system could be chemical fertilizers, pesticides, fuel the farmer uses to plant or harvest a crop, or even what is used to heat a greenhouse or barn.

Understanding the carbon footprint of food products allows consumers to look beyond how far their food traveled, and to incorporate food processing, food storage, and how their food was grown in assessing how all of these aspects impact climate change and the environment. Spector (2008) draws national attention to this issue by asking the American public, "how big is your footprint?" and proclaims that having a large carbon footprint today is the equivalent to wearing a scarlet letter. The moral identification with

an ecological footprint is putting many consumers on alert to do what they can to minimize the effect. Unfortunately, the confusion between morality and science is sending a mixed message.

A term specifically targeting the environmental fallout related to our food system is *food miles*. Food miles were originally dubbed to mean how many miles food has traveled to get to a consumer's plate. The premise behind locally grown food suggests that the food travels less distance and therefore has acquired fewer "food miles." The Natural Resource Defense Council has reported that a typical American meal contains ingredients from five countries outside the United States (2008). The use of the term food miles allows consumers to consider their food products in a whole-system framework. Iles (2005 p. 164) states that, "since the mid-1990s, food miles have emerged as a new environmental representation supporting sustainable agriculture."

Economy. Zepeda and Li (2006) found that participants who associated local food with supporting the environment also associated it with supporting the local economy. The perceived public benefit of supporting the local economy is a commonly mentioned motivational factor for consumers of locally grown food (Eastwood et al., 1991; Kezis et al., 1998; Kolodinky & Pelch, 1997). Locavores might believe, for example, that purchasing local in some way benefits the local farmer by eliminating intermediary warehousing and processing entities, or that buying local keeps the financial benefit within the local economy. Indeed, past research shows that one of the observed motivations for shopping at farmers markets and participating in CSAs is to support local farmers (Govindasamy et al., 2002; Kolodinky & Pelch, 1997).

Social fairness. The idea of "supporting the local farmer" may be a larger concept, not just representing the economic support of local farmers, but also the social aspect of buying locally grown food. Another public benefit present in the literature is that consumers are motivated to buy a product that is good for the community in a broader sense by helping those who participate in local markets. For example, direct contact with the farmer has been presented as a motivational factor.

Social responsibility. Briceno and Stagl (2006) argue that the role of consumption needs to be rethought as a social activity in order to create a more effective approach to increasing sustainable behaviors. The social limitations present in our conventional complex food system have spawned a form of consumer activism in which the consumers are becoming more political with food purchases and voting with their dollars. The introduction of social capital as a determinant for food consumption behavior pinpoints a new element of the decision-making process of the consumer. In short, this renewed sensitivity to social consciousness by the consumer has increased the popularity of the term "social responsibility" and gained the attention of corporate and community leaders. Daly (1996) suggests that integrating social capital into the list of positive attributes given to a consumer product enhances the need for the food industry to take into account the consumer desire to fulfill individual needs as well as public needs.

Why Not: Potential Barriers to Purchase

Private Barriers

Most consumption patterns are still heavily influenced by price, availability, and convenience. Faber et al. (2002) point out that as humans we seek to achieve our goals

with minimal effort. Therefore, humans' desire to reduce their costs of individual behaviors heavily influences how they shop for food and what they purchase. In a purely economic sense, price is often the primary stated barrier in the grocery industry. Price is often bundled with convenience or availability as possible barriers in today's current consumer market due to increasing obligations in today's world.

Public Barriers

The growing segment of consumers interested in both private and public attributes assigned to their food purchases has also caused a backlash in the public sector. Despite the claims that by buying local a consumer can reduce one's carbon footprint and contribute to public benefits, there is research that draws attention to what this might do to other public goods. For example, the *new localism* (Goetz & Clark, 1993; O'Riordan, 2001) is considered by some researchers as a reactionary movement against increasing globalization. Despite the consistently positive attitudes of consumers towards localism, some science supports the notion that *local* might not be as sustainable as it appears (Seyfang, 2006). There is a growing literature that explores the controversy between sustainable food systems being solely defined by local food networks with the ability to decrease food miles. Muller (2007 p. 2) argues that the "concept of 'food miles' is at best simplistic and can lead to unfair trade distortions which end up penalizing the very people who already bear an unfair burden of the impacts of climate change."

Between 1968 and 1998, food trade increased by 184 percent, and in 2005 approximately 3 million tons of fruit, vegetables, cereals, nuts, and wine were imported from overseas into California (NRDC, 2007). The new localism movement calls for greater attention to increasingly high imports and their environmental and social costs.

Despite this attention, this simplistic nature of the term "food miles" is not addressing the full scope and science behind carbon emissions. The idea of a carbon footprint is complicated. It has less to do with food miles, but instead, encompasses the entire agricultural system. For example, the New Zealand Agribusiness and Economics Research Unit (Saunders et al., 2006) found that some New Zealand products sold in the UK have a lower carbon footprint even though they accumulated more food miles than the locally produced equivalent.

However, drawing attention to the potential downfall of local food popularity further supports the need to investigate what consumer perceptions and motivations currently are regarding the production location of their food. To address this interaction, the current project was designed to explore how the discussed benefits and barriers--both private and public--influence motivational factors considered as potential determinants of behavior. The identification of different determinants or variables predictive of purchase behavior in regard to local food can aid in bridging the gap of understanding between consumer attitudes and behavior.

CHAPTER TWO

THEORETICAL FRAMEWORK

Theory of Planned Behavior Model

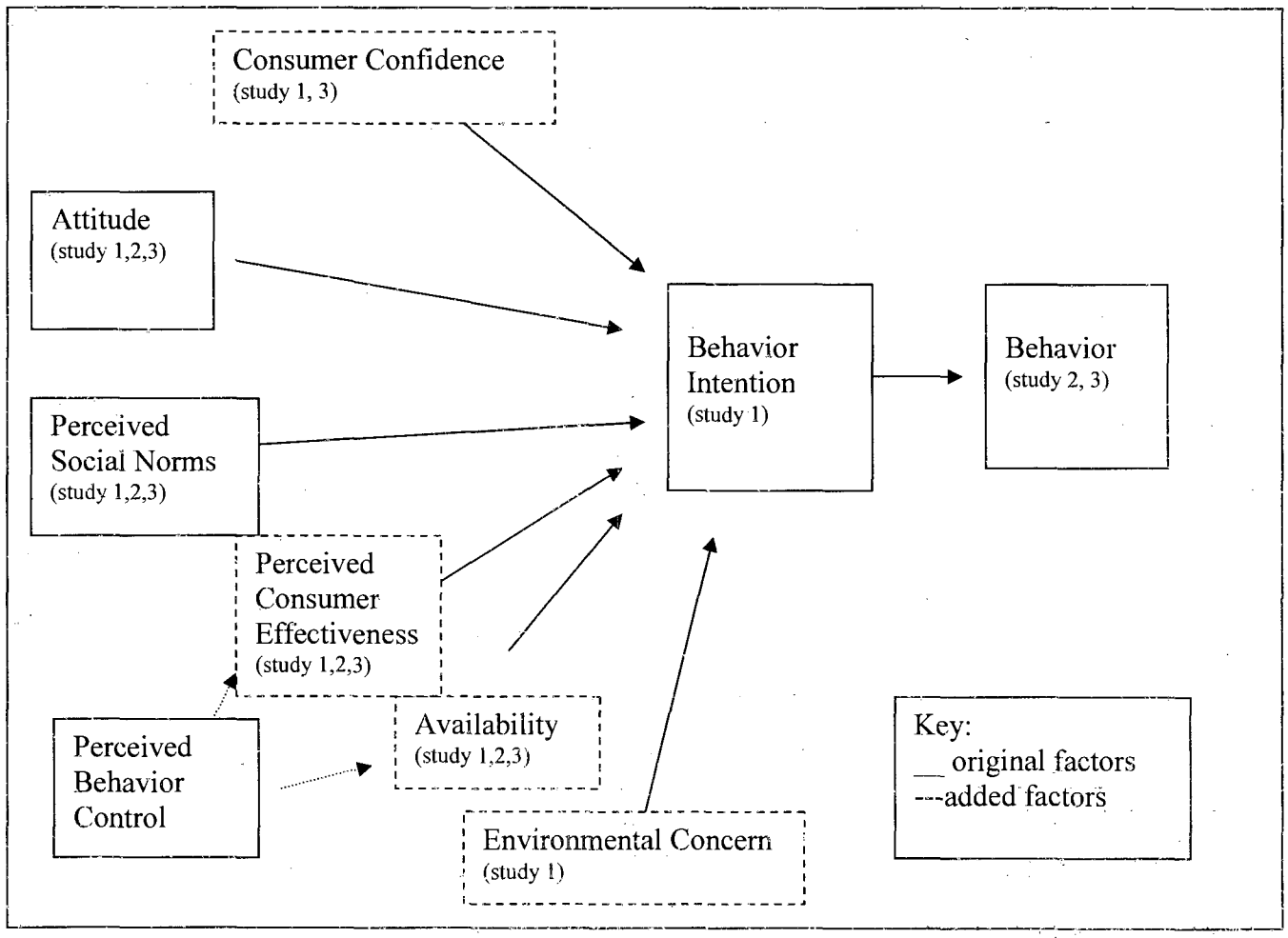
This research was conducted to provide insight from a social science perspective into consumer perceptions and behaviors toward local produce in an effort to identify and potentially bridge the gap in understanding of consumer decision making. The Theory of Planned Behavior (TPB) acts as a framework to explore the influence of both private and public benefits of and barriers to purchasing local produce. This theory states that attitudes, in conjunction with perceived social norms and perceived behavioral control, help to predict one's intention to perform a behavior, which ultimately guides actual behavior. The three studies included in this dissertation all integrate this theory into various survey tools.

Behavior

The inconsistent connection between attitudes and behavior insinuates that there might be other factors that help predict behavior. Figure 1 depicts the Theory of Planned Behavior as expanded for this project. Vermeir and Verbeke (2006) suggest that there are a variety of complex motivations that most likely influence purchase decisions. The larger context of behavior is important in the grocery environment where there are a

Figure 1

Expanded TPB Model Adapted for Dissertation.



lot of choices and information available. Hence, other determinants that moderate behavior and dilute the impact of initial attitudes might come into play when considering a broader purchase decision (Vermeir & Verbeke, 2006).

Attitude

An attitude is an evaluation toward something (a food product in this case), seen in one's beliefs, feeling, or intended behavior (Myers, 2005). Attitudes have been shown to be important components in behavioral intention, but perhaps not the only one. It is important to evaluate consumer attitudes toward the food product in order to understand the role it plays in behavioral intention and actual behavior. Attitudes reflect both an evaluative and cognitive dimension toward an object (Vaske, 2008). Attitudes can be evaluative of an object in a positive or negative direction and cognitive by looking at certain beliefs associated with the attitude object. For this project the attitude construct was operationalized by the evaluation of various attributes (e.g., locally grown) as important. Reheul et al. (2001) found that if consumers have a positive attitude toward sustainable products they tend to pay attention to packaging claims and are more likely to buy the product. In contrast, Grunert and Juhl (1995) found that despite positive environmental attitudes, consumers were still tentative on spending money to support environmental causes. Therefore, attitudes do play a role in predicting behavior but not the only role, which emphasizes the importance of other components of the model.

Social Norms

Solomon (2004) asserts that norms are more specified rules pertaining to values. Since values are very general ideas or beliefs about good and bad goals, norms turn the goals into behavior. Myers (2005) defines norms as rules for accepted and expected

behavior. Social norms are standards shared by the members of a social group (Vaske, Shelby, Graefe & Heberlein, 1986). In the context of the TPB, the concept of norms is operationalized as how social pressure from family, friends, or society as a whole can influence behavior. Specifically, identifying the strength of the perceived social norms (i.e., subjective norms) will aid in trying to predict and understand behavior.

Norms that are of interest in consumer psychology involve commitment to a product through susceptibility to social influence. The expanded model takes into account the level of strength of subjective norms and its effect on purchasers' behavioral intentions regarding locally grown food.

Perceived Behavioral Control

Perceived behavioral control defines the level of belief that one *can* act in a way to change the situation or an outcome, as opposed to believing that one's actions have no influence on an outcome. In general, the loss of perceived control is the consequence for a person who feels overwhelmed by a current situation (Bell et al., 2001). Too much stimulation, such as severe weather, multiple tasks or demands on one's time, or too much information to process, can create a situation that feels overwhelming and masks possible effective behaviors. Control models predict what happens when a person loses perceived control. One of these models that is used in the field of environmental psychology is the behavior constraint model, which emphasizes how the environment can limit or constrain one's behaviors (Proshansky, Ittlson, & Rivlin, 1970). The constraining factor that is limiting behavior can be physical or psychological. For example, those who believe that there is little one person can do to limit the effects of global warming might not be as likely to curb energy use.

This concept has also been related to the psychological constructs of self efficacy and locus of control. Self efficacy is based in the power of positive thinking and our sense that we are competent and effective (Bandura, 2000). This concept is rooted in self-based theory, in which a high self efficacy has been related to one's ability to perservere despite difficulties. The level of competency needed for a given behavior to be successful might ultimately influence whether or not a person performs that behavior. For example, a consumer might need to believe that the purchase of a certain product will make a difference. The level of competency in one's control over the outcome might be higher for private benefits than public ones. Consumers might believe they can do something about their health by buying produce, but not feel they can affect a public good. Similarly, locus of control (LOC) has been researched as a potential factor influencing environmentally friendly behavior and may be a better predictor than self efficacy. For example, an internal LOC has been found to favorably influence decision making related to pro-environmental behaviors (Cleveland et al., 2005).

Behavioral control is assumed to be influenced by both inner control factors (e.g., self efficacy) and external control factors (e.g., perceived barriers). Therefore, even if a consumer intends to purchase a certain product, he or she might not be able to do so. Vermeir and Verbeke (2008) used *perceived product availability* to represent potential external barriers and *perceived consumer effectiveness* to reflect inner control factors. Thus, the perceived behavioral control contruct is operationalized as both perceived consumer effectiveness and perceived product availability for this dissertation.

Perceived Consumer Effectiveness (PCE). The field of consumer behavior specifically utilizes behavior constraint theory when measuring perceived consumer

effectiveness (PCE). PCE is a measure of a person's judgment in the ability of individual consumers to mitigate environmental resource problems (Antil, 1978). Specifically, this measure is concerned with consumers' perceived belief that their actions will bring about positive outcomes or that constraints are present that will inhibit their behavior. For example, Kinnear, Taylor, and Ahmed (1974) found that when consumers believed they could effectively curb pollution, they showed more concern for the environment. Roberts (1996) found that 33% of variation in ecologically conscious consumer behavior (ECCB) could be explained by PCE. He further stated that a person's concern for the environment (belief) is not nearly as important in explaining ECCB as is PCE.

The benefits of purchasing locally grown food need to be in the consumer's realm of perceived control. Roberts (1996) suggests that for pro-environmental motives to influence consumer behavior, consumers must be convinced that their behavior has an impact on the environmental or social good that the product represents. Researchers argue that a high PCE reaches beyond just changing consumer attitudes toward a product and further motivates consumers to purchase a product (Berger & Corbin, 1992; Ellen et al., 1991).

Availability. Consumer decision making is affected by the extent to which certain environmental and social factors influence the consumer. For example, Robinson and Smith (2002) stated that 52% of consumers were interested in purchasing sustainable food, but did not do so because of perceived barriers, such as availability, inconvenience, and price. Vermeir and Verbeke (2006) also found that availabilty can influence purchasing behavior. The fact that locally grown foods are seasonal by nature and are available through various retail channels highlights the necessity for including perceived

availability as a possible determinant. The current project sought to understand the linkage between consumer attitude and behavior intention when these products *are* available, so the methodological approach considered availability as a component of perceived behavioral control.

Other Possible Determinants Not Part of the Main Model

Consumer Confidence

Vermeir and Verbeke (2008) introduce consumer confidence as a possible self-related determinant that could influence the behavioral intention to purchase sustainable foods. Consumer confidence is defined as the consumer's confidence that the product does what it promises it will do. This concept is therefore not related to the consumers' perception of their own behavior, but of the accuracy of assigned product attributes.

Values and Environmental Concern

Values are the basic beliefs that people hold about many things including locally grown agriculture practices, and represent how people believe things *ought to be*. They are considered relatively stable over time within an individual and are robust with respect to situational influence. Schwartz and Bilsky (1987) also define values as guides to selection of behavior, ordered in importance with other values, and that can pertain to modes of conduct. Schwartz (1992) further states that there are 10 types of values. These different types of value dimensions were able to be measured and evaluated for their influence on attitudes and behavior intentions. Engel et al. (1995) claim that values are an important part of the decision making process for consumers when determining which brand to choose. Values have been shown to motivate behavior, specifically when used in

regard to the evaluation of environmental attitudes and behavior. For the purpose of this study, the personal value of environmental concern will be measured in both a global and specific framework. The value of global environmental concern (EC) will be measured by using the SEQUOIA Environmental Concern subscale (Clarke, 1998). The specific value of environmental concern based on the food system and eating patterns will also be explored.

Overview of Project Studies

Based on Fishbein and Ajzen's (1974) conceptualization of the Theory of Planned Behavior, the current project was designed as an initial exploration of situational and personal determinants that could aid in prediciting local food choice behaviors within different samples. Specifially, the purpose of the current studies was to investigate the consumer attitude-behavioral intention gap, defined as the lack of consistency between positive attitudes and behavior intention toward purchasing locally grown produce. Three studies examine various components of the TPB model depicted in Figure 1 in an effort to predict behavioral intention to purchase locally grown produce. These components include attitude, perceived social norms, perceived behavioral control, consumer confidence, and environmental concern.

The studies include (1) a university student survey (CSU), (2) a national survey of primary food shoppers in households, and (3) an in-store interview/observation of actual shoppers. Table 1 shows an overview of the samples and variables measured in each study. While no specific hypotheses were laid out at the onset of this project, three broad research questions were outlined.

General research questions included:

(1) Is the TPB a good model to explore local food purchase intentions?

(2) What are some additional determinants that can be added to the basic model that might help bridge the gap between positive attitudes and behaviors?

(3) Will the survey respondents vary in their motivations to purchase locally grown foods?

Table 1

Inclusion of Variables in Each Study

		CSU	Nation	In-Store
Independent Variables				
	Attitude: importance of local	X	X	X
	Attitude: importance of other Attributes	X	X	
	Perceived social norms	X	X	X
	Perceived consumer effectiveness	X	X	X
	Availability	X	X	X
	Consumer confidence	X		X
	Environmental concern	X		
Dependent Variables				
	Past purchase of local/direct produce		X	
	Intention to purchase local produce	X		
	Willingness to pay for local attribute		X	
	Actual purchase behavior			X

CHAPTER THREE

UNIVERSITY STUDENT SURVEY

This study investigated determinants of local food purchasing behavior using a diverse and comprehensive set of measures for the expanded TPB model. Due to the nature of the study, a wide set of variables was able to be included in order to gain reliability of the measures used for the different constructs in the TPB model. Both individual and social influences on behavioral intention were targeted by focusing on both perceived private and public benefits of purchasing locally grown produce. The main TPB model was also expanded to include consumer confidence and environmental concern. In addition, self-reported barriers and motivators to purchase were explored as potential determinants that might influence motivation.

Pilot Study

A pilot study was conducted in order to test internal consistency of different items that were used to measure determinants in the TPB model. A sample of Colorado State University summer school students (n=110) filled out a pilot paper survey in the summer of 2008. Perceived consumer effectiveness was measured with nine items, two items each for four possible effectiveness domains (health, environment, economy and social) and

one item referring to a more global type of social responsibility. These nine PCE items had a Cronbach's alpha of .80. A varimax rotated principal components exploratory factor analysis extracted two factors explaining 53.9% of the variance in behavioral intention. All PCE factors loaded onto the first factor with loadings ranging from .317-.823. In addition, the two health factors loaded onto a second factor with loading values of .536 and .660.

Additional measures included perceived social norms, (4 items, alpha=.76), consumer confidence (5 items, alpha=.73), and environmental concern (5 items, alpha=.78). A varimax rotated factor analysis on each of these constructs revealed one (social norms, 64% variance explained) to two (environmental concern, 76% variance explained; consumer confidence, 69% variance explained) factors being extracted for each. All items on the environmental concern scale loaded on the first factor (.710-.759) while three of the factors that focused on more global environmental concern also loaded onto a second factor (.438 and .456). Consumer confidence was split into two extracted factors with one factor related to private attributes of food and the second factor more closely aligned with the public attributes. All of these measures were used in their entirety in the university student study, and relationships will be discussed more completely with the findings from the larger sample.

Method

Participants

The final student survey was administered in January 2009 to 218 Introductory Psychology students at Colorado State University, who received credit toward a course research requirement. The survey was a paper "distracter" component embedded in another study. Age was not asked, but the usual mean age of students enrolled in the introductory course at CSU is around 18.5. There were 69 males and 144 females included.

Materials

The survey is shown in Appendix A. There were various items measuring different latent constructs of TPB, including the following predictor variables:

a. *Attitude toward local food and other food attributes:* Five food attributes or issues associated with purchasing fresh produce were presented to the participants. Each item was rated on a 5-point continuous scale ranging from "not at all important" to "extremely important." There was also a box that the participant could check labeled, "I never think about that issue when choosing fresh produce." The different attributes were: locally grown, has proven health benefits, minimal environmental impact, supports the local economy, and farm labor was treated fairly during production and harvest. These items were treated as separate variables.

b. *Perceived Consumer Effectiveness (PCE):* PCE was measured with the same nine items from the pilot study. One of the statements ("Each consumer's behavior can have a positive effect on society by purchasing products sold by socially

responsible companies") was developed and used by Roberts (1996) in his PCE scale. The remaining eight items were modeled after the Roberts scale. They were paired belief statements based on four different attributes associated with locally grown food (e.g., "I believe that by purchasing certain kinds of food, I can have a substantial positive impact on my health"). These four components included health, social fairness, economy, and the environment. Items were scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7). Alpha for the scale was .77.

c. *Availability:* Perceived availability was defined by two statements measuring whether or not the participants believed that local foods were available in general and specifically in their neighborhood (shortened version of Vermeir & Verbeke, 2008). Items were scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7). The alpha was .65. The two statements were averaged together for the analyses.

d. *Social norms:* Social norms were measured using the same approach as Vermeir and Verbeke (2008). They used five items that reflected on sustainable food products, but for this study only four items were used representing the same possible social influences on local food product buying behavior (e.g., "People who are important to me influence my buying behavior, and think I should buy local food products"). The use of "people" was replaced with "my family," "society," and "friends" on other items. Items were scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7). Alpha was .81.

e. *Consumer confidence:* Participants also completed a 5-item consumer confidence measure that was adapted from Vermeir and Verbeke (2008) to ask about local food products in general. Aspects of consumer confidence included in this measure pertained to different characteristics associated with the purchase of local food products (e.g., how confident you are that local food products are effectively ecologically produced, stimulate rural employment, are better for your health, provide a fair income for the producer, are a better choice for you). Respondents indicated how confident they were about the five items on a 6-point scale ranging from 1=not confident at all to 6=extremely confident. The alpha was .81.

f. *Environmental concern:* Participants responded to six statements that were used to assess environmental concern. Three of the six items were directly from the SEQUOIA (Clarke, 1998) and based on more general environmental concern orientation statements. The three remaining statements were more specified and oriented toward food, such as "I would be willing to make personal food consumption sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant." The remaining two items were measuring the participant's perception of global warming and the relationship it has with food production. All items were scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7). Alpha was .76.

g. *Barriers and motivations:* Barriers and motivations toward purchasing locally grown food were measured by asking open-ended questions, including: "What is the main reason for your purchase of locally grown produce?" and "What might keep you from buying locally grown produce on a specific shopping trip?" A

content analysis was performed on both of these questions in order to quantify responses. Responses were organized by theme, with motivations being categorized as public or private. Barriers were categorized by top reported themes in the literature such as price and availability.

Other items were included as dependent variables, including:

h. *Behavioral intention:* Behavioral intention to buy locally grown fresh produce was a one-item indicator measured on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7).

Procedure

The survey was administered to Introductory Psychology students as a distracter task in another experiment. There were 20 students sitting at tables in a basement room on the CSU campus. They were given 10 to 15 minutes to complete the survey.

Results

Descriptive Analysis of Variables in TPB Model

Attitudes toward food attributes. Table 2 shows the means and standard deviations of the different attributes associated with fresh produce. Mean statistics reflect the assigned level of importance, on a 1 to 5 scale, to each attribute when making purchase decisions. Consistent with the notion that private benefits tend be ranked higher than public benefits in relation to food attributes (Hartman Group, 2008), "proven health benefits" had the highest reported level of importance (M= 4.12, SD=1.15).

Table 2

Descriptions of Important Attributes of Fresh Produce

Attributes of Fresh Produce:	Mean (*SD*)	Rank	*n*
Proven health benefits	4.12 (0.77)	1	208
Minimal environmental impact	3.94 (0.97)	2	180
Supports local economy	3.61 (1.06)	3	165
Farm labor was treated fairly during production	3.51 (1.20)	4	146
Locally grown	2.93 (1.15)	5	182

Following health, "minimal environmental impact" was ranked second (M=3.94, SD=1.04) suggesting that there might be a public benefit motivating local produce purchase as well. Of particular interest is the finding that the importance of purchasing "locally grown" fresh produce ranked last (M=2.93, SD=1.15) behind "fair treatment of farm labor" (M=3.51, SD=1.20).

Table 3 shows the correlations among the attributes' importance. There is a general pattern of significant correlations between all attributes, but health tends to hold the lowest correlations with all other variables. Consistent with the notion that consumer importance of private and public benefits differs, the reported relationships between various public benefits were stronger than relationships between public and private benefits. Due to the topic under study it is important to note that "locally grown" is correlated the highest with "supports local economy" (r=.498, p<.01).

Perceived Consumer Effectiveness (PCE). Table 4 shows the means and standard deviations for each item on the PCE scale from the questionnaire. Since the second health statement did not add to the reliability of the scale and was not significantly correlated with the other health statement (r=.120, p=.08), it was dropped from the PCE scale and all further analyses. The Cronbach's alpha for the remaining eight items was

.77. This is comparable to Roberts' (1996) scale of four items with an alpha of .72. The construct of PCE was evaluated using the remaining eight items, and partially represented the "perceived behavioral control" dimension of the Theory of Planned Behavior for the analyses in this study.

Table 3

Correlations between Fresh Produce Attributes

	Locally Grown	Health Benefits	Environment Benefits	Support Economy	Labor Fairness
Locally Grown		.167*	.377**	.498**	.420*
Health Benefits			.324**	.216**	.220**
Environmental Benefits				.506**	.484**
Support Economy					.494**

*p<.05, **p<.01.

Table 4

Means and Standard Deviations of PCE Items

PCE Item	Statement	*M*	*SD*
PCE1- Health	I believe that by purchasing certain kinds of food, I can have a substantial impact on my health.	6.32	.793
*PCE- Health	I believe health is largely determined by factors that have nothing to do with the types of fresh produce I choose to purchase.	3.45	1.49
PCE2- Social Responsibility	Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.	5.20	1.00
PCE3-Environment	I believe that the natural environment is influenced by so many factors that it is not affected by my decisions to buy or not to buy certain types of fresh produce.	4.32	1.39
PCE4- Environment	I believe that by choosing to buy or not to buy certain foods, I can have a positive impact on the natural environment.	5.00	1.14
PCE5- Social Fairness	I believe that I can make a statement about social fairness by carefully choosing the fresh produce I buy.	4.33	1.34
PCE6- Social Fairness	I believe that my purchase decisions really have no impact on social fairness.	4.07	1.54
PCE7- Economy	I believe that what I choose to buy and where I choose to buy certain foods have little influence on the local economy.	4.81	1.28
PCE8- Economy	I believe that what I choose to buy and where I choose to buy fresh produce can have an impact on the local economy.	5.60	1.01

*Dropped from scale.

A varimax rotated principal components exploratory factor analysis confirmed that there are possibly two factors underlying the PCE scale. Table 5 shows that health does load onto Factor 1 with the other eight items, but that it also loads onto Factor 2 with social responsibility. This analysis explains 52.9% of the variance, with the first factor explaining 30% of the variance and the second 22.9%. This suggests that all items are measuring a similar construct, but health and social responsibility might be measuring another dimension as well. Therefore, since two factors were extracted, there might be a possible variation between beliefs that a consumer can be effective making a difference at a personal level versus the public level.

Due to this possibility one composite variable was created with all eight PCE items, but the relationship between private and public benefits was also explored. The composite construct of PCE had a mean of 4.96 (*SD*=.75) suggesting that the participants moderately believed that they could influence all measured components associated with local food through their purchase behavior.

The composite PCE was used in the main TPB analysis, but the individual components (health, economy, environment, social fairness, and social responsibility) were also explored. Environment, economy, and social fairness were measured with two-item indicators that were significantly correlated and then averaged together. The PCE scale and the five components (health, economy, environment, social fairness, and social responsibility) of PCE are described in Table 6. Additionally, Table 7 shows the correlations of all elements included in PCE and the composite variable.

Table 5

Factor Analysis of PCE Scale

PCE	Component 1	Component 2
PCE 1: Health	.379	.640
PCE 2: Social Responsibility	.449	.471
PCE 3: Environment	.707	
PCE 4: Environment	.627	
PCE 5: Social Fairness	.665	
PCE 6: Social Fairness	.648	
PCE 7: Economy	.734	
PCE 8: Economy	.662	

Table 6

Final Variables Associated with PCE

PCE Variable	*M*	*SD*
PCE (8 items)	4.96	.75
PCE Health	6.31	.79
PCE Social Responsibility	5.21	1.01
PCE Environment	4.67	1.05
PCE Social Fairness	4.20	1.21
PCE Economy	5.21	.98

Table 7

Correlations of the Five Dimensions of PCE

	Environment	Economy	SocFair	SocResp	PCE All
Health	.225**	.244**	.137*	.180**	.374**
Environment		.565**	.474**	.229**	.817**
Economy			.481**	.185**	.811**
Social Fairness				.342**	.805**
Social Responsibility					.327**

**$p<.01$.

Availability. The items measuring perceived availability were significantly correlated (.494, $p<.01$) and were averaged into one "availability" variable. The mean of the new availability variable was 4.74 (SD=1.29). A reliability analysis was performed on the PCE items and the availability items to see if they could be combined to represent the latent construct, *perceived behavioral control,* in TPB. The Cronbach's alpha for all perceived behavioral control items was .65, comparable to a similar composite scale created by Vermeir and Verbeke (2008) at .69. A confirmatory factor analysis, as shown in Table 8, indicated the three factors [PCE public (Factor 1), PCE private (Factor 2), and availability (Factor 3)] together explain 58% of the perceived behavioral control variance.

Table 8

Factor Analysis for Perceived Behavioral Control

	1	2	3
PCE 1: Health		.607	
PCE 2: Social Resp.	.447	.528	
PCE 3:Environment	.686		
PCE 4:Environment	.620		
PCE 5: Social	.628		
PCE 6: Social	.644		
PCE 7: Economy	.735		
PCE 8: Economy	.669		
Availability 1			.697
Availability 2			.842

Social norms. Table 9 shows the mean values for the items included in the measurement of perceived social norms. The Cronbach's alpha for social norms was .86, higher than the .61 reported by Vermeir and Verbeke (2008) using the same items. Only one factor was extracted in a factor analysis. The mean value for social norms was 3.83 (*SD*=1.31) suggesting, on a scale from 1 to 7, that the reported level of social norm influence was moderate.

Environmental Concern. The mean scores and standard deviations for the items in the environmental concern scale are presented in Table 10. The Cronbach's alpha for the proposed scale was highest with EC4 removed at .76. EC4 was a reverse-scored item that might have confused the participants and therefore was dropped from the scale. A factor analysis performed on the rest of the variables (5 items) resulted in only one factor being extracted. The mean for this scale was 5.03.

Consumer confidence. The adaptation of Vermeir and Verbeke's (2008) consumer confidence scale had a Cronbach's alpha of .81, comparable to the original (.85). Table 11 shows item statistics, including the new component that was added for this study: confidence in health benefits. The mean confidence level for all 5 items was 4.16 *SD*=.89), indicating that the participants had a moderate level of confidence in the various stated benefits of local food products. In an attempt to replicate Vermeir and Verbeke's (2008) study, the respondents were classified as either low or high in consumer confidence (using a median split) on this scale. The median was 4.30 with 109 participants in the 'low' group and 109 participants in the 'high' group.

Table 9

Social Norm Items

SN	Statement	*M*	*SD*	Factor Loading*
SN1	People who are important to me influence my buying behavior, and think I should buy local food products.	4.12	1.52	.85
SN2	My family influences my buying behavior, and thinks I should buy local food products.	3.95	1.70	.88
SN3	Society influences my buying behavior and thinks I should buy local food products.	3.83	1.49	.99
SN4	Friends influence my buying behavior and think I should buy local food products.	3.43	1.51	.86

*Factor analysis: 71.1% variance explained.

Table 10

Environmental Concern Scale

EC	Statement	*M*	*SD*	Factor Loading**
^EC1	One of the most important reasons to conserve is to preserve wild areas.	5.18	1.27	.73
^EC2	We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves.	5.35	1.43	.73
^EC3	I would be willing to make personal food consumption sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant.	4.98	1.45	.77
^*EC4	Endangered species should not be protected but NOT at any cost.	3.40	1.68	-.49
EC5	Global Climate change/global warming is a real problem that humankind faces.	5.31	2.10	.69
EC6	I believe human food production activities are significantly contributing to global climate change/global warming.	4.33	1.60	.66

^ Adapted from SEQUOIA scale (Clarke, 1998).
**Factor analysis: 52.8% variance explained.
*Dropped from environmental concern scale.

Table 11

Description of Consumer Confidence

Statement	*M*	*SD*	Factor Loading*
How confident are you that local food products are effectively ecologically produced?	4.09	1.00	.769
How confident are you that local food products stimulate rural employment?	4.34	1.37	.557
How confident are you that local food products are better for your health?	4.07	1.25	.807
How confident are you that local food products provide a fair income for the producer?	4.08	1.13	.765
How confident are you that local food products are a better choice for yourself?	4.20	1.17	.867

*Factor analysis: 58.2% variance explained.

Behavioral intention. Participants' responses resulted in a mean of 5.66 (*SD*=1.03) when asked if they agreed with a statement regarding their intentions to purchase local fresh produce. The reported intention to purchase local fresh produce became the outcome variable for the inferential statistics.

Other Variables Measured Not Part of TPB Model

Barriers and motivations. A content analysis was completed on both open-ended questions based on barriers to purchase local produce and the primary motivator to purchasing local produce. The motivations for buying were organized into either a private benefit (e.g., health) or public benefit (e.g., economy, environment). The primary motivator for buying locally grown produce was private, with 70% of people listing a

private benefit. The most frequently reported barriers were price (47%), availability (21%), and convenience (14%).

Gender variation. There was a significant gender difference between level of environmental concern, with females (M=5.15) reporting higher levels than males (M=4.80), t (211) = 4.23, p<.05. Females (M=5.86) also reported a higher intention to purchase local produce than males (M=5.46).

The five different basic components of PCE were analyzed for gender differences, with significant t-tests for two of the five elements included in the PCE construct as shown in Table 12. Males tended to score lower on all five dimensions of PCE. In addition, there was significant gender variation within the composite PCE scale.

Table 12

PCE and Gender

	Gender				
	Male	Female	T	p	η^2
Health	6.14(0.79)	6.40(0.78)	-2.22	.03	.023
Environment	4.52(1.03)	4.73(1.06)	-1.40	.16	.010
Social Fairness	4.03(1.17)	4.29(1.23)	-1.48	.14	.010
Economy	5.14(0.95)	5.25(1.03)	-2.76	.01	.035
Social Responsibility	5.14(0.95)	5.25(1.08)	-0.71	.48	.002
PCE	4.73(0.76)	5.02(0.79)	-2.48	.01	.028

Predictors of Behavioral Intention-TPB

TPB main model. Multiple regression was used to ascertain whether the TPB could explain consumer intention to purchase locally grown produce. Table 13 shows

results from the regression equation that most aligns with the TPB model that Vermeir and Verbeke (2008) used to investigate sustainable food consumption, but with the added health component that is unique to this study. The replicated model utilizes the respondent's self-reported intention to purchase locally grown fresh produce as the dependent variable. The independent variables, consistent with the TPB, are attitude, perceived behavioral control, and social norms. For this analysis, the attitude variable is general (based on a 1-item indicator of importance of locally grown food), and PCE is the composite scale.

Two models were initially tested. The first considered the effect of attitude, social norms, and perceived behavioral control on intention (Model 1). The second considered the effect of adding consumer confidence to Model 1 (Model 2). The purpose of using a two-step regression was to look at the TPB in the general form and add consumer confidence to the equation to ascertain whether this variable would increase explanatory variance. A hierarchical analysis was performed in which the independent variables used to explain intention were chosen due to their similarity with the Vermeir and Verbeke variables. All independent variables in the model were centered around the mean. Model 1 indicated that attitude (β=.20, p<.01), or level of importance given to locally grown produce, social norms (β=.10, p<.05), and perceived consumer effectiveness (β=.26, p<.01) were significant predictors of behavioral intention. This model accounted for 20% of the variance in behavioral intention. Consumer confidence was entered in the next step of the analysis and accounted for an additional 16% of the variance. The unique contribution of consumer confidence was found to be significant (β=.48, p<.01), while attitude and social norms were no longer significant.

Table 13

Summary of Regression Analysis for TPB model

Variable	*B*	*SE B*	Beta	Model R^2
Model 1:				.20
Constant	5.68	.07		
Attitude: locally grown	0.18	.07	.19**	
Social Norms	0.10	.06	.13*	
PCE	0.37	.10	.28**	
Availability	0.00	.06	.05	
Model 2:				.36
Constant	5.69	.06		
Attitude: locally grown	0.11	.06	.12	
Social Norms	0.01	.05	.01	
PCE	0.29	.09	.25**	
Availability	-0.08	.06	-.12	
Confidence	*0.54*	*.08*	*.47***	

*$p<.05$, **$p<.01$, $\Delta R^2=.157$

This model will be referred to as the "primary model" for the remaining TPB analysis results. A participant profile one standard deviation above and below the mean on all predictors in Model 2 predicted a behavioral intention value of 6.42 and 4.94, respectively. This means that an average consumer with a high confidence in a specific product will have a higher intention of buying the product than the same average consumer with a lower perceived confidence in the same product (e.g. locally grown apple).

Prediction Variation between Attributes of Local Foods in the TPB

Tables 14-17 isolate the different characteristics of potential motivators influencing local produce purchases. These analyses allow further investigation into whether different individual elements vary in their relationship with intention to purchase local produce. Individual hierarchical regressions were used to examine the different dimensions (motivators) and how they might differ from the larger model. All analyses used the same entry format as the main model: the TPB variables of attitude, social norms, PCE, and availability (Step 1), and consumer confidence (Step 2). Some of the variables remained the same: respondent's self-reported intention to purchase locally grown fresh produce (DV), social norms, and availability. The independent variables of attitude, PCE, and confidence all changed for every analysis with a specific 1-item indicator pertaining to each benefit in the particular model being analyzed. Each independent variable was centered around the mean for the analysis. The individual motivators that were analyzed were health, environment, social, and economic benefits.

Table 14

Summary of Regression Analysis for TPB model Focusing on Health

Variable	*B*	*SE B*	Beta	Model R^2
Model 1:				.13
Constant	5.66	.07		
Attitude: health	0.18	.09	.14	
Social Norms	0.16	.05	.20**	
PCE: health	0.13	.09	.10	
Availability	0.13	.05	.17*	
Model 2:				.23
Constant	5.65	.06		
Attitude: health	0.17	.09	.13*	
Social Norms	0.07	.05	.10	
PCE: health	0.07	.09	.06	
Availability	0.08	.05	.11	
Confidence	*0.29*	*.06*	*.34***	

*$p \leq .05$ **$p < .01$, $\Delta R^2 = .098$

Table 15

Summary of Regression Analysis for TPB model Focusing on Environment

Variable	*B*	*SE B*	Beta	Model R^2
Model 1:				.16
Constant	5.70	.08		
Attitude: environment	0.08	.06	.08	
Social Norms	0.17	.06	.22**	
PCE: environment	0.16	.07	.16*	
Availability	0.14	.06	.17*	
Model 2:				.21
Constant	5.67	.08		
Attitude: environment	0.06	.07	.06	
Social Norms	0.14	.06	.18*	
PCE: environment	0.16	.07	.17*	
Availability	0.05	.06	.07	
Confidence	*0.29*	*.08*	*.27***	

*$p \leq .05$ **$p < .01$, $\Delta R^2 = .056$

Table 16

Summary of Regression Analysis for TPB model Focusing on Social Fairness

Variable	*B*	*SE B*	Beta	Model R^2
Model 1:				.11
Constant	5.71	.08		
Attitude: social	0.05	.07	.06	
Social Norms	0.11	.06	.15	
PCE: social	0.09	.07	.11	
Availability	0.16	.06	.20*	
Model 2:				.21
Constant	5.71	.08		
Attitude: social	0.03	.07	.05	
Social Norms	0.07	.06	.09	
PCE: social	0.09	.07	.12	
Availability	0.09	.06	.12	
Confidence	*0.30*	*.07*	*.33***	

*p>.05 **p<.01, ΔR^2=.097

Table 17

Summary of Regression Analysis for TPB model Focusing on Economy

Variable	*B*	*SE B*	Beta	Model R^2
Model 1:				.20
Constant	5.72	.07		
Attitude: econ	0.28	.07	.29**	
Social Norms	0.11	.06	.14	
PCE: econ	0.14	.08	.14	
Availability	0.11	.06	.14	
Model 2:				.23
Constant	5.72	.07		
Attitude: econ	0.23	.07	.24**	
Social Norms	0.09	.06	.12	
PCE: econ	0.14	.08	.14	
Availability	0.07	.06	.10	
Confidence	*0.14*	*.05*	*.20***	

**$p<.01$, $\Delta R^2=.030$

Health. Table 14 shows that Model 1 accounted for 12% of the variance with attitude (β=.14, p<.05), social norms (β=.20, p<.01), and availability (β=.17, p<.05) as significant predictors. In Model 2, when controlling for consumer confidence, social norms are no longer a significant predictor. In other words, when consumer confidence is taken into account it decreases the influence of other people (social norms). Similarly, the positive relationship between perceived availability and behavior intentions decreases when confidence is in the model. Of importance, PCE is not a significant predictor in this model, suggesting that there is no relationship specifically with belief that one can affect one's own health by eating local produce and intending to buy locally grown produce.

Environment. Some 21% of the variance regarding intention to purchase locally grown produce can be explained by looking more specifically at the environmental consideration of motivators including consumer confidence. Similar to the main model, the model results reported in Table 15 show that the belief that a consumer can make a difference in the environment by buying certain foods was a significant predictor of behavioral intentions (β=.17, p<.05). Uniquely, social norms made a significant contribution to the model (β=.18, p<.05), suggesting that social influence does play a role when focusing on the environmental attributes of local food products.

Social. Specifically looking at the role of social fairness with attitudes, PCE and confidence in the larger TPB model isolates the function of consumer confidence. There was a significant positive relationship between confidence that local food products provide a fair income for the producer and intent to buy locally grown produce when holding the remaining factors in the model constant (β=.33, p<.01), explaining 21% of the variance (Table 16).

Economic. Interestingly, what is unique in this model is that 23% of the variance in behavior intent with respect to economic considerations in the model were related to attitude (β=.24, p<.01) and confidence (β=.20, p<.01) (Table 17). Therefore, how important respondents find it is to support the local economy in their decision making, as well as how much confidence they have that it will stimulate rural employment, help to predict whether or not they intend to purchase locally grown produce. Table 18 gives a brief overview of which predictors were significant for each of the different predictors.

TPB and the Role of Consumer Confidence

These findings suggest that what is important in predicting local purchasing incentives is not necessarily having local food available to the community or having a positive attitude toward local food, but rather findings suggest that the set of beliefs or perceptions about how much control purchasers have over a larger goal and whether the product can do what it claims to do is important. Consumer confidence seems to play a key role in intention to purchase locally grown produce. Similar to Vermeir and Verbeke (2008), the significant role of consumer confidence was further investigated in participants who reported 'high' or 'low' confidence levels. Formal significance tests of consumer confidence as a moderator using the interaction between independent variables and consumer confidence as a continuous variable were not significant.

Table 18

Significant Predictors (p<.05) of Intention to Purchase Local Produce by Dimensional Motivators

Variable	Health		Environment		Social		Economy	
	1*	2	1	2	1	2	1	2
Attitude	X	X					X	X
Social norm	X		X	X				
PCE			X	X				
Availability	X		X		X			
Confidence		X		X		X		X

*model #

Some significant differences among the independent variables did exist when a median split was used to separate participants into high and low consumer confidence groups. Table 19 shows that lower confidence consumers reported lower behavioral intentions, attitudes, PCE levels, perceived availability, and social norm influence across the board. Independent samples *t*-tests performed on the variables in Table 19 revealed significant differences between the high and low consumer confidence groups on all variables.

Table 20 shows the relationship between participants in either high or low confidence groups and the predictive ability of TPB model on behavioral intention. The model was not significant for low confidence consumers, $F(4,81)= 1.36$, $p=.255$, but it was for highly confident consumers, $F(4,89)=7.27$, $p<.001$. In addition, the percent of variance explained in behavioral intention by the TPB model was lower for the low confidence sample ($R^2=.06$) that the high confidence sample ($R^2=.22$). Similar to Vermeir and Verbeke (2008), there was a positive relationship between intention and social norms for the high confidence group ($\beta=.23$, $p<.05$) and not the low confidence group ($\beta=-.07$, p=ns). In addition, PCE was a significant predictor of behavior in the high confidence group ($\beta=.33$, $p<.01$).

Table 19

Means (and Standard Deviations) of the TPB components; Total Sample and High vs. Low Confidence

	Behavior intention	Attitude	Perceived availability	Perceived consumer effectiveness	Social norms
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Total Sample	5.66 (1.03)	2.93 (1.15)	4.74 (1.29)	4.77 (.82)	3.83 (1.31)
High confidence	6.10 (0.81)	3.27 (0.99)	5.17 (1.20)	4.94 (.84)	4.25 (1.18)
Low confidence	5.13 (1.05)	2.51 (1.20)	4.23 (1.24)	4.60 (.81)	3.32 (1.30)

Table 20

Regression Coefficients of TPB Components According to Confidence Level

	B		*Beta*		*p*-value	
Level of confidence	Low*	High**	Low	High	Low	High
Constant	4.12	3.79			.00	.00
Attitude towards attribute	.16	.01	.18	.09	.14	.39
Social Norms	-.01	.16	-.07	.23	.55	**.02**
PCE	.18	.32	.14	.33	.24	**.00**
Perceived Availability	.00	-.03	.02	-.05	.99	.63

*R^2=.06 **R^2=.22

TPB and the Role of Environmental Concern

Similar to Vermeir and Verbeke (2008), the role of value orientation was explored as a determinant of purchase behaviors as well. The role of environmental concern is focused on due to its previous link to local food purchase behavior in the literature (Roberts, 1996). Although environmental concern is significantly correlated with intention to buy local produce (r=.20, p<.01), it was not a significant predictor in any of the TPB models tested. In addition, formal significance tests of interactions between independent variables and environmental concern--a continuous variable--as the moderator were not significant. Despite the lack of explanatory power in the regression analyses, some differences did exist in participants when split into 'high' and 'low' groups.

Participants were classified into 'high' or 'low' groups regarding value orientation for environmental concern using a median split. Table 21 shows the means and standard deviations of the variables in the TPB model. Similar to the relationship between consumer confidence and the TPB, participants who scored high (vs. low) on environmental concern reported stronger intentions to purchase local produce, thought it was more important, were more influenced by social norms, believed they could make a difference, and perceived local produce as more available. Independent samples t-tests showed significant differences between the high and low environmental concern groups on all TPB model variables.

Table 21

Means and Standard Deviations of the TPB components; Total Sample and High vs. Low Environmental Concern

	Behavior Intention	Attitude	Social Norms	PCE	Perceived Availability
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Total Sample	5.66 (1.03)	2.93 (1.15)	3.89 (1.33)	4.99 (.76)	4.74 (1.29)
High Environmental Concern	5.84 (0.99)	3.16 (1.14)	4.14 (1.27)	5.28 (0.68)	5.27 (0.68)
Low Environmental Concern	5.46 (1.04)	2.67 (1.27)	3.61 (1.35)	4.67 (0.73)	4.67 (1.29)

Table 22 shows that among participants who scored low (vs. high) on environmental concern, the only significant predictor of behavioral intention was the level of importance given to the locally grown attribute. Among individuals with low environmental concern, higher attitudes were associated with higher intention to buy. Among participants who scored high (vs. low) in environmental concern, PCE was the only significant predictor of intention to purchase local produce. Therefore, holding all other variables constant, a participant who scored high (vs. low) on environmental concern and was one standard deviation above the PCE mean would have a behavioral intention score of 5.89 and a participant (high in environmental concern) one standard deviation below the PCE mean would score 5.39. Among individuals with high environmental concern, a higher PCE is associated with higher intentions to buy.

Discussion

Figure 2 shows the observed relationships in the expanded TPB model obtained from the first study. Similar to Vermeir and Verbeke (2008) this study demonstrates the importance of the role of consumer confidence and environmental concern in explaining food behavior, specifically intention to purchase local produce. The study goes one step further to look at expanded elements of the TPB relationship with behavioral intention. This is important to note because the motivations behind purchase still seem to be varied. For example, when bundling all attributes and benefits into one model there are different significant predictors than when dissecting different elements that might motivate purchases.

Table 22

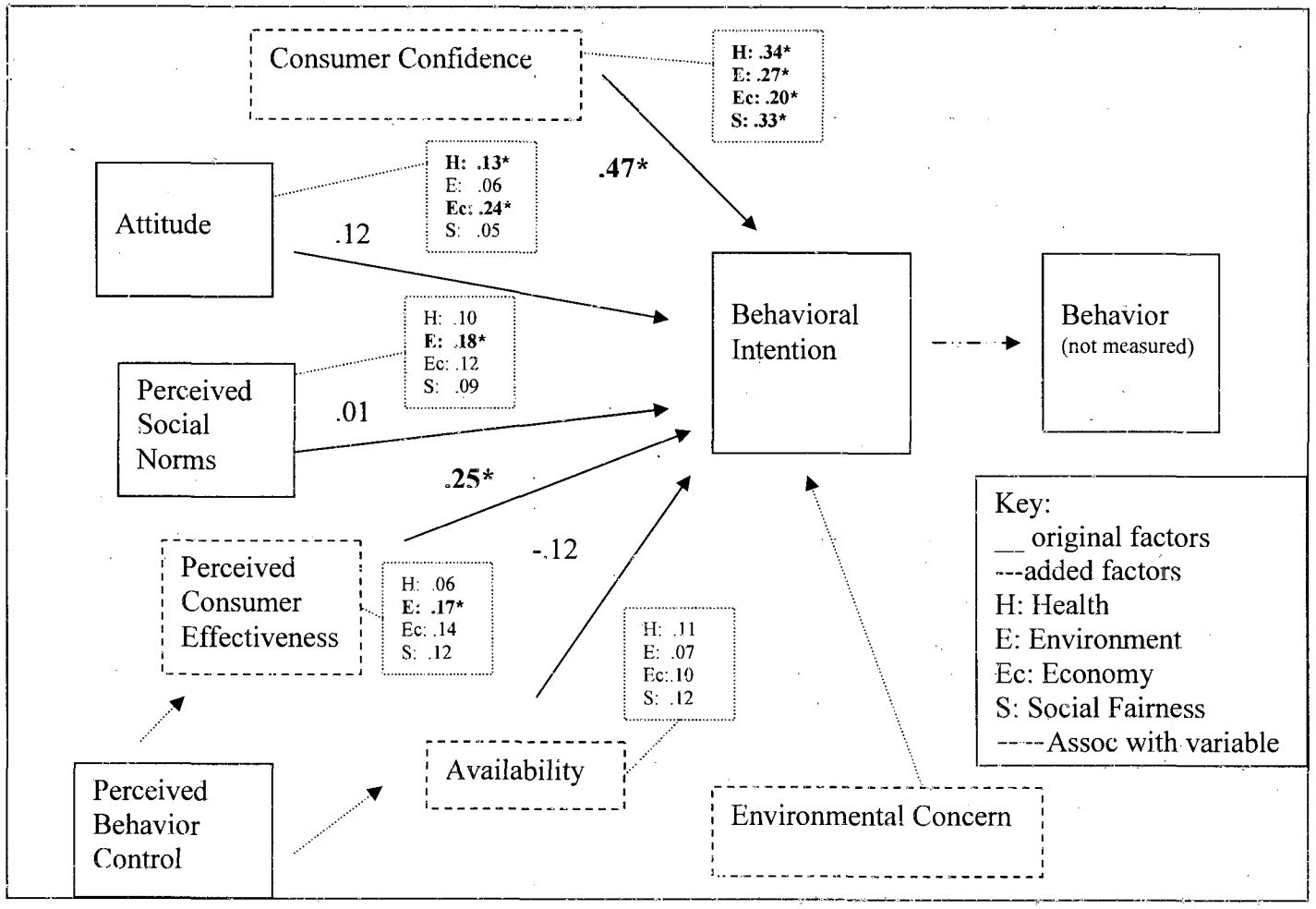
Regression Coefficients of TPB Components According to Environmental Concern

	B		*Beta*		*p*-value	
Level of Environmental Concern	Low*	High**	Low	High	Low	High
Constant	5.67	5.64			.00	.00
Attitude: Locally Grown	.21	.15	.23	.17	**.03**	.10
Social Norms	.01	.14	.11	.18	.34	.06
PCE	.24	.34	.17	.34	.14	**.00**
Perceived Availability	.11	-.02	.15	-.03	.17	.76

*R^2=.18 **R^2=.20

Figure 2

University Student TPB Model



Note: Smaller boxes contain coefficients for regression analyses of individual components; main model coefficients are outside of the box.

Also, reported motivation was still primarily based on private benefits, but Table 3 shows that the importance of the locally grown attribute was correlated more strongly with public benefits than private benefits. Interestingly, the private benefit model indicated the highest influence of consumer confidence (β=.34) over any of the other public good models, but consumer confidence played a significant role in all models. This shows that consumer confidence in a product to deliver benefits associated with it plays a significant role in intent to purchase regardless if it is a private or a public benefit.

In addition, the dissection of benefits identified a difference in the PCE relationship with behavioral intention. In fact, the primary model indicated PCE as a significant predictor in both Model 1 and Model 2, but once dissected into either health, environment, economy, or social dimensions, PCE only remained significant within the environmental dimension. PCE plays a strong role when focusing on environmental benefits suggesting a need to further explore the motivations of ecologically conscious consumer behavior and belief or self efficacy in making a difference in a certain outcome.

One limitation of this study was that it was based on a college sample. Although most of the college sample's motivation to buy local was for a stated "private" benefit, it was interesting to see that different types of goods might have different possible latent motivators associated with their purchase.

This sample did enable a more comprehensive measurement of various predictors of behavioral intention. A limited set of these predictors was tested in the next study with a broader sample and in the third study with in-store purchase behavior.

CHAPTER FOUR

NATIONWIDE STUDY

This study was part of a larger interdisciplinary project funded by a United States Department of Agriculture grant initiative entitled, "Organic, Locality, and Food Miles--Implications for Trade, Supply Chains, and Consumer Welfare." The PI on the grant is Dr. Dawn Thilmany McFadden. The market analysis was based on a nationwide internet survey administered by Knowledge Networks, Inc. from October through November, 2008. A reduced model of the TPB was used due to time and space constraints over the number of questions that could be asked, but still targeted some of the same determinants of local food purchase behavior as the study of university students. The main model of TPB was used in this study. The model reflects similarities in predictor variables with the previous study, but the outcome variables (DVs) were different. Specifically, the main objective of this study was to determine the predictive value of the TPB in helping to determine which customers shop from direct markets as well as the willingness to pay for labeled locally grown produce among respondents.

Darby et al. (2008) found that consumers who select to shop direct versus consumers who do not have significant differences in responses to different local food attributes in choice modeling. Therefore, this research built on those findings and the

TPB to try to understand the psychological predictors that might be influencing local shopping behavior.

Method

Participants

Knowledge Networks, Inc. was directed to obtain a representative stratified sample (n>1000), of primary grocery shoppers across the country. Some 1,829 primary grocery shoppers were sent the survey, and 1,269 participants responded to the survey with a 69% response rate. Data included 1,052 usable observations representative of American consumers. The intermountain west was oversampled (n=397). Table 23 shows the summary statistics of pertinent demographic information. For example, females were the majority of the respondents (71% female) which was expected due to the fact that they are often the primary grocery shopper. The mean age was 50.2 and the sample was 75% Caucasian.

Table 23

Demographic Information for Nationwide Sample

Variable Name	Description	Frequency	Percentage	Mean
Age				50.2
Education	<High School	107	8	
	High School	353	28	
	Some College	415	34	
	Bachelor's or higher	394	31	
Gender	Male	369	29	
	Female	900	71	
Race	White	949	75	
	Black	100	8	
	Other	31	2	
	2+ ethnicities	131	10	
	Hispanic	58	5	

Materials

The items that were used from the survey are shown in Appendix B. All predictor variables were taken from Study 1. There were various items measuring different latent constructs of TPB, including the following predictor variables:

a. *Attitude toward locally grown food:* Participants were asked how important it was that their fresh produce was locally grown. This item was rated on a 5-point continuous scale ranging from "not at all important" to "extremely important." There was also a box that the participant could check labeled, "I never think about that issue when choosing fresh produce." There were other attributes included in the descriptive statistics and compared to the university student sample. They were environment, economy, health, and social fairness.

b. *Perceived Consumer Effectiveness (PCE):* PCE was measured with a reduced number of items from the first study. There were four items, one item for each attribute associated with local food purchase (e.g. "I believe that by purchasing certain kinds of food, I can have a substantial positive impact on my health"). These four components included health, social fairness, economy, environment, and social responsibility. Items were scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7). Alpha for the scale was .85.

c. *Availability:* Perceived availability was defined by one statement measuring whether or not the participant believed that local foods were readily available. It was scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7).

d. *Social norms:* Social norms were measured using a one-item indicator from the composite scale created for the university study. The item reflected possible social influences on local food product buying behavior with the statement, "People who are important to me influence my buying behavior, and think I should buy local food products." It was scored on a 7-point scale, ranging from strongly disagree (1) to strongly agree (7).

The following dependent measures were assessed:

e. *Current purchase behavior:* Information on current purchasing behavior was solicited through a series of three questions. The consumers were asked to identify where they primarily, secondarily, and seasonally shop for produce. Produce was clarified as "fruits and vegetables" in all three of the questions. In addition, primary source was operationalized as over half of consumer purchases, secondary as less than half of their purchases, and seasonal as "less than half of your purchases during specific seasons such as summer." Each of the three questions provided the following options to select from: supermarket and supercenter, health/natural supermarket, convenience/corner store, farmers market, food co-ops, direct from producer, and specialty food store. Data were collapsed across location with farmers market and direct from producer in the 'direct' category and all others in the 'not direct' category.

f. *Choice data:* A choice experiment was conducted as part the larger NRI grant. Each participant was given a series of produce comparisons (apples and tomatoes) with different labels and assurances in an effort to understand the consumer's tradeoffs between product characteristics, including price (Appendix C). There

were many different attributes explored in the project, but of specific interest in this study was the assurance made regarding origin of production. Therefore, the key attribute considered in this analysis was whether or not the product was locally grown. Choices made by the individual were utilized to calculate willingness to pay (WTP) estimates at the individual level. WTP coefficients for both local tomatoes and local apples were used in separate analyses.

Procedure

Shoppers were sent the survey via online or WebTV. Participants took about 20 minutes to complete the survey.

Results: Descriptive Analysis of Variables in TPB Model

Attitudes toward Locally Grown Produce

Table 24 shows the means and the standard deviations of the different attributes associated with fresh produce. Similar to the student sample, health benefits had the highest ranked importance (M=3.52, SD=.69), but environmental impact was ranked last by the nationwide sample while it was ranked second by the student sample (M=3.11, SD=.83). Correlations between the attributes are shown in Table 25.

Perceived Behavioral Control

Perceived Consumer Effectiveness (PCE). Table 26 shows the means and standard deviations of the reduced PCE scale. Note that there are five items, each pertaining to a different element attributed to local food. These items were selected from the larger set of PCE questions used in the CSU student sample. The strongest one-item

indicators were used from the CSU survey for each of the different attributes associated with locally grown produce (health, environment, economy, and fair labor).

Table 24

Attributes of Fresh Produce on Nationwide Sample

Attributes of Fresh Produce:	Mean (SD)	Rank	N
Proven health benefits	3.52 (.69)	1	994
Supports local economy	3.39 (.73)	2	976
Farm labor was treated fairly during production	3.24 (.85)	3	893
Locally grown	3.13 (.81)	4	994
Minimal environmental impact	3.11 (.83)	5	919

Table 25

Correlations between Fresh Produce Attributes on Nationwide sample

	Health	Environment	Economy	Labor
Local	.322	.466	.581	.457
Health		.459	.421	.448
Environment			.556	.634
Economy				.555

A varimax rotated principal components analysis confirmed that there is only one factor extracted in the PCE scale explaining 63% of the variance (Table 27). Items were averaged together to develop the PCE scale for the analyses in this study. Correlations between the items are shown in Table 28. All items are significantly correlated, but correlations are not high enough to raise concerns of multicollinearity.

Table 26

Means and Standard Deviations of PCE Items on Nationwide Survey

PCE Item	Statement	*M*	*SD*
PCE1-Health	I believe that by purchasing certain kinds of food, I can have a substantial impact on my health.	5.41	1.40
PCE2-Economy	I believe that what I choose to buy and where I choose to buy fresh produce can have an impact on the local economy.	5.08	1.36
PCE3-Environment	I believe that by choosing to buy or not to buy certain foods, I can have a positive impact on the natural environment.	4.33	1.56
PCE4- Social	I believe that I can make a statement about social fairness by carefully choosing the fresh produce I buy.	4.09	1.57
PCE5- Social Responsibility	Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.	4.74	1.52

Table 27

Factor Analysis of PCE Scale for Nationwide Study

PCE	Factor Loading*
PCE 1: Health	.726
PCE 2: Economy	.758
PCE 3: Environment	.829
PCE 4: Social	.809
PCE 5: Social Responsibility	.846

*63% Variance Explained

Table 28

Correlations of the Five Dimensions of PCE in Nationwide Study

	Health	Environment	Economy	SocalFair	SocialRes	PCE All
Health		.462**	.529**	.410*	.534**	.727**
Environment			.500**	.659**	.641**	.831**
Economy				.486**	.526**	.753**
Social Fair					.630**	.813**
SocialRes						.843**

**p<.01.

Availability. The PCE scale was paired with an availability item to represent the "perceived behavioral control" latent construct of the TPB. A varimax rotated principal components analysis of the full "perceived behavioral control" latent construct found that all items loaded onto one factor (Table 29). The mean for the perceived availability item was 4.45 (SD= 1.48) suggesting that consumers were slightly above neutral when asked if local food products were readily available.

Table 29

Factor Analysis of Perceived Behavioral Control Construct for Nationwide Study

	Factor Loading*
PCE 1: Health	.725
PCE 2: Economy	.762
PCE 3:Environment	.817
PCE 4: Social	.791
PCE 5: Social Resp.	.830
Availability	.498

*56% variance explained

Social Norm

The one-item indicator used to measure social influence on purchase behavior had a mean of 3.69 (*SD*=1.61). This is comparable to the reported mean of the composite scale created from the university student study of 3.83 (*SD*=1.31).

Current Purchase Behavior

All three purchase behaviors were reduced to dichotomous variables categorizing customers who did or did not buy their produce primarily, secondarily, or seasonally from a direct source (i.e., farmers market and direct from producer). Not surprisingly, the primary produce source preferred by consumers tended to be supermarkets and supercenters (82.9%), while 11% primarily sourced direct from the producer or a farmers market.

TPB Variables

It is important to note that the variables that were included in the inferential statistics and make up the TPB were significantly correlated. Table 30 shows the significant relationships between these variables.

Table 30

Correlations of TPB Factors in Nationwide Sample

	Social Norm	PCE	Availability
Attitude	.288**	.345**	.230**
Social Norm		.419**	.269**
PCE			.372**

**p<.05.

Results: TPB Model to Understand Consumer Local Food Behavior

TPB and Current Purchase Behavior

Consumers who purchased produce directly were targeted in an effort to understand potential purchase motivations. Each question on the survey pertaining to where a consumer shops (or does not shop) for produce was analyzed separately. Data were organized into mutually exclusive dichotomous variables assigning participants into primary versus nonprimary, secondary versus nonsecondary (excluding primary), and seasonal versus nonseasonal (excluding primary and secondary) direct source shoppers. Some 111 participants primarily sourced their produce from direct sources (farmers market or direct from producer). Consumers who sourced their produce directly, as a secondary or seasonal option, were more evenly distributed throughout the sample. Some 40% of consumers reported buying direct at least monthly (although this shopping represents less than half of their produce purchases), while 51% of consumers reported sourcing produce directly during at least one season.

The different levels of engaged consumers (primary, secondary, or seasonal shoppers) and their reported means (and standard deviations) on TPB variables are reported in Table 31. In particular, all TPB predictors were significantly higher for those

who bought produce primarily through direct sources than for those who did not. Moreover, significant differences were found in attitude, social norms, and availability between participants who sourced produce directly as a secondary option, and those who did not (excluding participants who primarily sourced produce direct). Seasonal shoppers of directly marketed produce were significantly different from those who never sourced direct produce with respect to reported levels of attitude toward locally grown produce and PCE.

Table 31

TPB Variables by Produce Source Location

		Don't Buy Direct		Buy Direct		F	Partial η^2
		n=906		n=111			
Primarily		M	SD	M	SD		
	Attitude	3.16	0.88	3.47	0.67	12.50*	.01
	Social Norm	3.61	1.58	4.23	1.67	15.32*	.02
	PCE	4.49	1.21	4.92	1.33	12.18*	.01
	Availability	4.40	1.47	4.81	1.55	7.65*	.01
Secondarily							
		n=317		n=477			
	Attitude	3.06	0.91	3.25	0.84	9.86*	.02
	Social Norm	3.49	1.57	3.82	1.55	8.51**	.01
	PCE	4.66	1.16	4.76	1.12	1.42	.00
	Availability	4.29	1.43	4.54	1.48	5.83**	.01
Seasonally							
		n=131		n=186			
	Attitude	2.90	0.96	3.17	0.86	6.70*	.02
	Social Norm	3.32	1.60	3.60	1.55	2.47	.01
	PCE	4.47	1.16	4.79	1.14	5.97**	.02
	Availability	4.16	1.51	4.38	1.36	1.76	.01

*p<.01 **p<.05.

A binary logistic regression was utilized to explore the predictive power of TPB in classifying consumers who were obtaining produce from a direct, local source. The TPB model correctly classified between 56% and 87.1% of consumers into those who do and do not directly buy, proving to be moderately successful. Depending on the consumers' level of engagement, there were some variables that were better indicators of a consumer buying direct. For example, in Table 32 the odds of a consumer primarily sourcing produce direct were significantly higher for participants who reported a higher level of importance and greater influence of social norms. In addition, the odds of a consumer sourcing produce direct as a secondary food marketing choice were significantly higher for those who gave a higher level of importance to locally grown food, reported higher social influence, and reported higher perceived availability (Table 33). Similarly, the odds of consumers seasonally buying direct increased significantly if they had a positive attitude toward locally grown food.

Table 32

Binary Logistic Regression Predicting Primary Direct Purchasers (n=1268)

Variable	*B*	*SE B*	Exp(B)	*p*	Nagelkerke R^2
Model:^					.05
Constant	-4.69	.601	0.01	.00*	
Attitude: locally grown	0.33	.136	1.39	.02**	
Social Norms	0.15	.073	1.17	.04**	
PCE	0.11	.109	1.12	.30	
Availability	0.08	.077	1.08	.32	

^87.1% correctly classified *p<.05 **p<.01.

Table 33

Binary Logistic Regression Predicting Secondary Direct Purchasers (n=947)

Variable	*B*	*SE B*	Exp(B)	*p*	Nagelkerke R^2
Model^:					.06
Constant	-1.37	.401	.255		
Attitude: locally grown	.37	.102	1.45	.000**	
Social Norms	.15	.055	1.16	.007**	
PCE	-.03	.097	0.97	.782	
Availability	.11	.057	1.12	.047*	

^60% correctly classified *p<.05 **p<.01.

Table 34

Binary Logistic Regression Predicting Seasonal Direct Purchasers (n=947)

Variable	*B*	*SE B*	Exp(B)	*p*	Nagelkerke R^2
Model 1^:					.039
Constant	-1.62	.369	0.20		
Attitude: locally grown	0.30	.094	1.35	.002*	
Social Norms	0.03	.050	1.04	.500	
PCE	0.13	.072	1.14	.068	
Availability	0.00	.052	1.00	.997	

^56.3% correctly classified *p<.01.

TPB and Willingness to Pay for Local

TPB was used in an effort to explain the amount a consumer was willing to pay for produce that is labeled as locally grown. The variables in TPB were not significant and did not aid in explaining the variation in willingness to pay for locally grown tomatoes. Table 35 shows the TPB variables as predictors of willingness to pay for local apples. Significant predictors were attitude (β=.12), social norms (β=.13), and PCE (β=.10). The Coefficient of determination (R^2) was .08, indicating that all the variables in the model explained only 8% of the variance in the willingness to pay for locally grown apples.

Table 35

TPB Explaining Willingness to Pay for Locally Labeled Apple

Variable	*B*	*SE B*	Beta	Model R^2
Model:				.08
Constant	-.225	.104		
Attitude	0.08	.025	.12**	
Social Norms	0.05	.015	.13**	
PCE	0.04	.020	.10*	
Availability	0.02	.016	.06	

*p<.05, **p<.01.

Results: Comparability to University Student Study

Age and TPB Predictor Variables

In order to be able to draw connections with the university student study, and understand if those findings had broader generalizability, it was important to investigate how the different age groups varied in the nationwide study. Table 36 shows that the only

factor in the TPB that significantly varied for the younger aged participants was attitude toward locally grown food. The importance given locally grown food in the age category of 18-34 was significantly lower than for the remaining age categories. It is important to note that the remaining factors--PCE, social norm, and availability--were not significantly different across age categories.

Table 36

Importance of Age on Nationwide Sample

	Age Category					
	18-34 *M (SD)*	35-44 *M (SD)*	45-59 *M (SD)*	60+ *M (SD)*	*F*	η^2
Attitude	2.79 (0.86)*[a]	3.06 (.79)[b]	3.29 (0.76)[c]	3.22 (0.80)[bc]	8.42*	.04
PCE	4.82 (1.17)	4.72 (1.26)	4.89 (1.23)	4.91 (1.35)	0.80	.00
Social Norm	3.75 (1.80)	3.46 (1.65)	3.87 (1.61)	3.87 (1.77)	2.28	.01
Availability	4.25 (1.40)	4.49 (1.48)	4.48 (1.54)	4.69 (1.64)	1.51	.01

*$p<.01$.
[abc] Those means not sharing the same superscript are significantly different.

Discussion

While supermarkets are still the dominant shopping choice of most consumers--the primary source for 82.5% of consumers surveyed-- it is important to try to understand the remaining consumer population's purchase motives as well as explanatory factors for auxiliary grocery purchases. The results offer moderate support for the applicability of the Theory of Planned Behavior. Figures 3 and 4 show that clear evidence was found that attitudes, or level of importance given locally grown produce, predict both willingness to pay and who buys direct from the source. In addition, depending on what level of

engagement a consumer has in actually purchasing direct (i.e., local), other factors from the TPB help to predict reported behavior. Specifically, knowing customers' level of normative influence as well as their perceptions about availability aided in predicting whether they would report buying direct for their secondary source of produce, and seasonal purchases were predicted by PCE as well as attitude.

In addition, trying to understand whether any of the personal and social determinants are driving willingness to pay is important. Using stated preference data from a choice-based conjoint analysis, WTP for the local attribute helped to provide insight into the value people hold for this attribute in relation to different psychosocial variables. A consumer's willingness to pay for apples that were labeled locally grown was significantly predicted by the attitude, social norms, and PCE components of the expanded TPB model.

Examining the level of engagement a consumer might have with locally grown food and how that might be related to the TPB model proved an effective way to begin exploring possible consumer segments. In order of predictive power, social norms, attitudes, and PCE are all factors that can be utilized for future behavioral interventions and marketing strategies. Although this and the previous study examined reported buying behavior, they did not provide an opportunity to assess actual purchase selections. The next study added this element by tracking actual purchases in a grocery store.

Figure 3

TPB Model: Nationwide Study (Odds of Buying Direct)

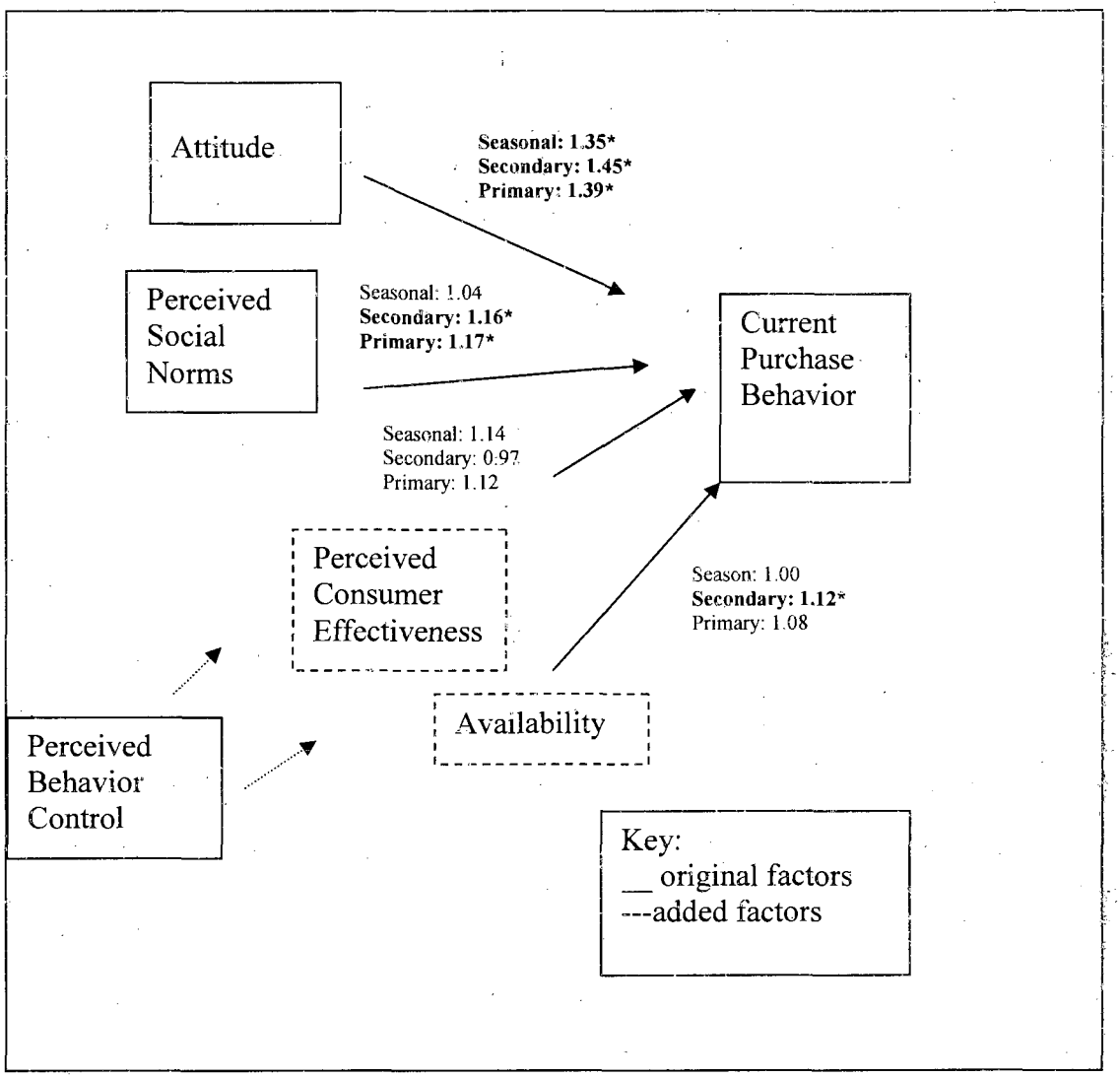
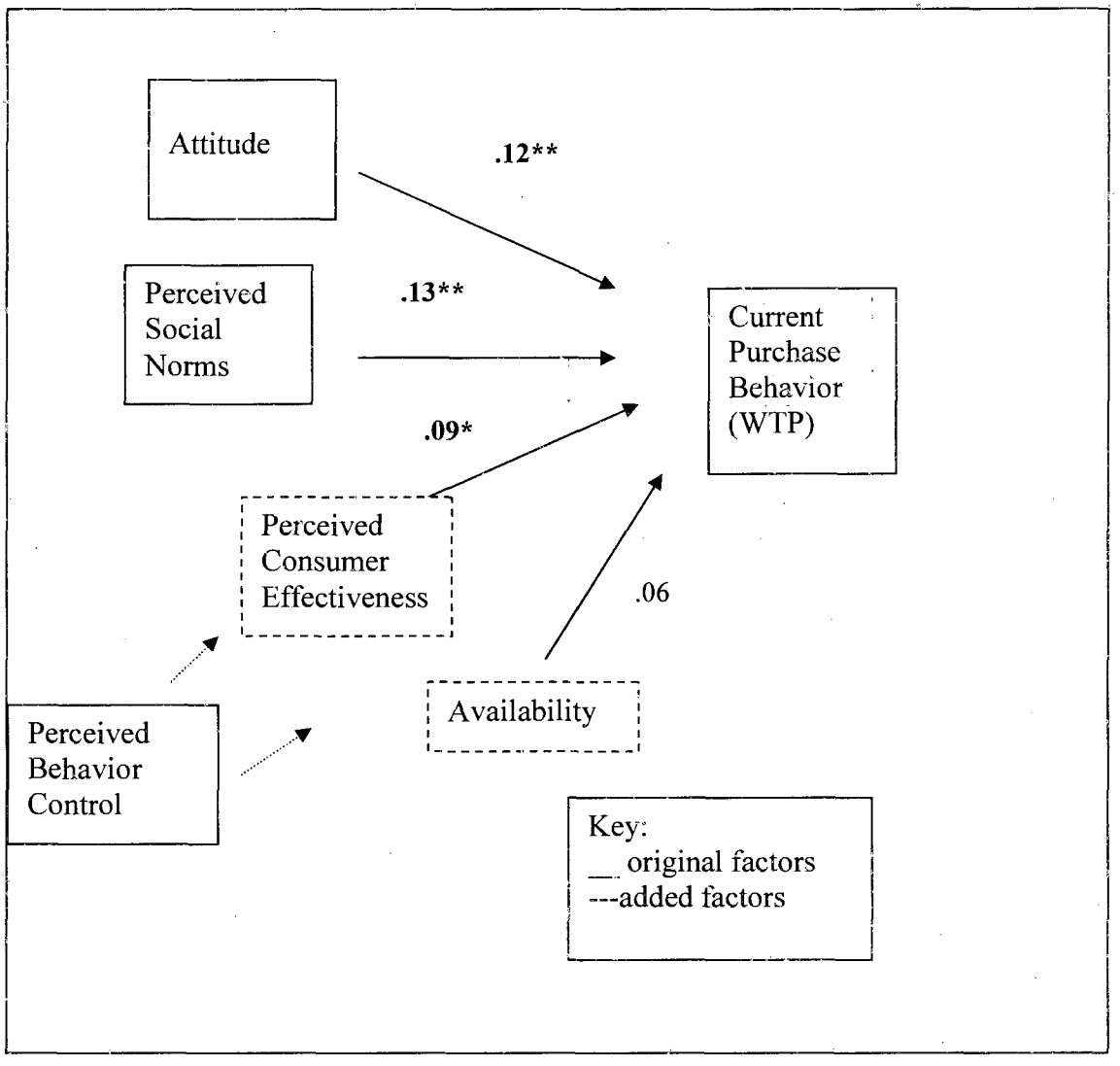


Figure 4

TPB Model: Nationwide Study (WTP for Local Apples)



CHAPTER FIVE

IN-STORE EXPERIMENT

An in-store experiment designed as part of an economics project was augmented to examine a subset of factors explored in the surveys of the previous two chapters. This study capitalized on the opportunity to record actual consumer purchase behavior in a real grocery setting, specifically focusing on the purchase of the cultivar red round tomato. Variables analyzed included demographics (gender, income, lifestage), beliefs, attitudes, subjective norms, confidence, motivators (reasons to purchase), barriers to purchase, price, and type of tomato (nonlocal nonorganic, nonlocal organic, local nonorganic, local organic).

Method

Participants

Consumers were selected to participate in the study if they were ≥18 years of age and customers of the grocery store when the researcher was present. A total of 72 customers participated in the survey and/or behavioral intention portions of the study. Ten participants completed the survey, but failed to have their actual purchase behavior documented, while ten participants had their purchase behavior documented but did not

complete a survey. Therefore, there were only 62 surveys completed and of those, 14 males and 48 females served as participants in the behavior intervention.

Experimental Design and Materials

Data were collected from shoppers at one mid-size store in an upscale chain of grocery stores in the Midwestern United States. Specifically, consumers were approached in one Minneapolis, Minnesota area grocery store between August 18 and August 30, 2008. This store was chosen due to access to the management and subsequent ability to manipulate pricing and receive other store data. A tomato display was set up in the store specifically for this study. Attached to the usual tomato display was an end counter containing only the four types of tomatoes in the experiment. All four types were presented next to each other so the customers could compare them with little effort (see Appendix D).

A between-subjects design was implemented in an effort to understand tradeoffs that consumers make among various produce attributes. Specifically, four types of cultivar red round tomatoes were presented to the customer in order to examine the effect of price and produce attributes on purchase choice. The four tomato types were: nonlocal nonorganic, nonlocal organic, local nonorganic, and local organic. A general price manipulation occurred at the display counter level and was supplemented with a simultaneous discount coupon pricing intervention with the consumer.

General manipulation. Table 37 shows the variation in signed pricing at the tomato display counter throughout the week. There were three price blocks (i.e., a set difference in pricing for the four types of tomatoes), each present two days of the week. On the seventh day (Sunday) price block #2 was repeated to ensure that some of the

operational errors of the first day of the study did not confound the data. There were no surveys or behavior intervention on Sunday. Prices in the baseline price block (#2) were increased 20% to obtain price block #3 and decreased 20% to obtain price block #1. The prices were changed, with signs at the tomato counter, as the store opened every morning. The total tomatoes sold were tracked by the store in an effort to see the change in amount bought by signed price.

Table 37

Price for In-Store Study Design

	Tomato Type				
Day	Nonlocal Nonorganic	Nonlocal Nonorganic	Local Nonorganic	Local Organic	Price Block
Monday	1.99	4.99	2.99	3.99	2
Tuesday	1.59	3.99	2.39	3.19	3
Wednesday	2.39	5.99	3.59	4.79	1
Thursday	1.99	4.99	2.99	3.99	2
Friday	1.59	3.99	2.39	4.79	3
Saturday	2.39	5.99	3.59	3.99	1
Sunday	1.99	4.99	2.99	3.99	2

Consumer coupon intervention. In addition to daily price manipulations, a consumer intervention was used to introduce more variability which allows for greater accuracy in prediction of the demand curve. The intervention consisted of approaching the customer who was going to buy tomatoes and offering him or her a coupon for the

purchase of a type of red round tomato in the experiment. All four types of tomatoes had their own coupon with a randomly generated amount listed on the coupon. The amount ranged from a discount of $0 to $2 for the total purchase. Each coupon visually looked the same for all types of tomatoes, except that the type of tomato was listed at the top and the date, price amount, and coupon # changed (see Appendix E). The consumer was shown four coupons simultaneously, one for each tomato type. There were different amounts on each of the coupons and consumers were able to pick any of the four coupons depending on their purchase choice.

Survey instrument. An abbreviated version of the survey from the previous two chapters was used to assess store customers' attitudes and motivations (see Appendix F). Because of the challenge in recruiting hurried grocery customers, the objective was to make our survey short and straightforward to complete.

The variables measured included: beliefs, attitudes, subjective norms, confidence, motivators, and barriers to purchase. Most variables were measured on a scale ranging from 1=strongly disagree to 7=strongly disagree, except for attitudes, which was measured on a scale ranging from 1=not important at all to 4=extremely important. Reasons to purchase local and barriers to purchasing local were open-ended. Some demographic variables such as income and life stage were included as well.

Procedure

The produce department of this particular store was the first section encountered upon entering the grocery store. The researcher approached customers as they entered the produce section and reached the tomato display. The customer was asked to participate in

a research study in which he or she would be provided a coupon for purchasing tomatoes. Individuals who agreed were presented with four coupons to choose from, one for each of the four types of tomatoes on the display (nonlocal nonorganic, nonlocal organic, local nonorganic, local organic). Coupon amounts varied for each customer depending on the order the customer entered the produce department. Therefore, the signed prices remained the same, but each customer received different values on all four coupons that were presented. For example, the local organic tomato coupon could be worth $.20 and the nonlocal organic coupon worth $.40 for one customer while the next customer could get a local organic coupon worth $1.40 and an organic coupon worth $.15, but the signed price for all tomatoes remained consistent throughout the day.

There was some periphery tomato competition within the produce section with other cultivars not included in the study. It should be noted that all but five customers planning on buying tomatoes *and* approached by the researcher did purchase a tomato from the research display; the other five purchased tomatoes that were not part of the research display.

When presenting the coupon choices to the customer, the researcher read each offer aloud, pointing to the tomato on the display which was related to each coupon. This approach cut down on confusion and allowed customers to focus on the signed prices and coupon amounts for the four types of tomatoes. After the customer chose one coupon, he or she was informed that the coupon amount would be deducted from the total grocery bill at the register. Customers were then asked to fill out a brief survey that took 3-5 minutes and that contained the coupon tracking number. The choice of tomato purchased was tracked through customer receipts collected by the store's point of sale (POS)

system. At the end of the day the coupons were collected from the register along with the total receipts of those who participated in the study.

Results

Purchase Behavior

Table 38 shows the actual amount sold at the store of each tomato type bought on each day. The amount was tracked through scanner data prepared by store employees. The results indicate that local tomatoes, both nonorganic (190.52 pounds) and organic (75.93 pounds), were the highest sellers during the seven days of the experiment. Correlation analysis also revealed that when prices were lower for conventional, nonlocal organic, and local organic the volume went up, as would be expected in a conventional demand response scenario.

There were no sales at all of the nonlocal organic tomatoes at their highest (block 3) price. This suggests a possible relationship between price and behavior, perhaps a ceiling effect since it was signed with the highest price condition out of all tomatoes ($5.99). The local tomato offerings were not only the most popular tomato of the week, but they also did not follow the same purchase trends as the other types. Price did not seem to influence purchase of local tomatoes. This can be seen in Table 38 showing the amount of tomatoes sold depending on price fluctuations across the different days. For example, on August 23, 2008 approximately 45 pounds of local nonorganic tomatoes were sold at a signed price of $3.59/lb, while on August 22, 2008 roughly 28 pounds of local nonorganic tomatoes were sold at a signed price of $2.39/lb.

Table 38

Amount of Tomatoes Sold During Intervention

		Nonlocal Nonorganic		Nonlocal Organic		Local Nonorganic		Local Organic	
Date	Block	Price	Pounds	Price	Pounds	Price	Pounds	Price	Pounds
8/19	1	1.59	6.89	3.99	0.78	2.39	8.85	3.19	27.82
8/22	1	1.59	4.71	3.99	7.04	2.39	26.76	3.19	10.78
8/18	2	1.99	1.85	4.99	1.54	2.99	59.05	3.99	3.31
8/21	2	1.99	3.44	4.99	0.37	2.99	22.23	3.99	5.05
8/24	2	1.99	3.50	4.99	1.46	2.99	14.98	3.99	10.22
8/23	3	2.39	4.55	5.99	0.00	3.59	44.69	4.79	9.96
8/20	3	2.39	3.11	5.99	0.00	3.59	13.96	4.79	8.79
Total			28.05		11.19		190.52		75.93

In addition, Table 39 shows actual purchase behavior collected for 62 consumers through the coupon/receipt tracking over the six days that a researcher was in the store. Out of 62, 42 customers chose the local nonorganic tomato, regardless of coupon amount or signed price. Additionally, 15 of the remaining 20 bought local organic tomatoes. Therefore, 92% of the sample purchased local tomatoes despite the value of the coupons, making significance testing impossible. Furthermore, six of the purchasers of local nonorganic tomatoes, three of local organic tomatoes, and one nonlocal nonorganic did not complete a survey and were not included in Table 38.

Another intended outcome variable, past purchase behavior, also showed little variation within the sample. For example, 60 of the 62 customers surveyed reported that they had purchased locally grown produce in the past. Due to the lack of variation in both of the intended outcome variables, the planned regression analyses to test the TPB model became impractical to conduct.

While the regression testing the TPB could not be completed, some descriptive and inferential statistics are informative in explaining potential findings and trends in the data. Table 40 shows the frequency of tomato type purchased by people of different demographic categories. In this sample, a majority were female, married with kids grown, and with a high income. It is again interesting to note that regardless of demographics, all customers were more interested in local produce.

Survey Questions

TPB. Descriptive statistics from the remaining questions on the survey were examined in an effort to gain some information from an applied field sample of

Table 39

Demographic Frequencies for In-store Study

		Tomato Type				Total
		Nonlocal Nonorganic	Nonlocal Organic	Local Nonorganic	Local Organic	
Gender	Female	2		30	9	41
	Male		2	6	3	11
Income	0-27,500				2	2
	27,500-57,500	1		4	2	7
	57,500-87,500			11	1	12
	Over 87,500	1	2	17	6	26
Lifestage	Single <40			2		2
	m/p,no kids	1		5	3	9
	m/p,yng kids		1	3	2	6
	m/p,oldr kids			5	1	6
	m/p,kids grwn	1	1	16	5	23
	Single>40			3	1	4
	Total	2	2	36	12	52

consumers in a grocery store despite the lack of behavior variation. Table 41 provides descriptive statistics for the variables representing the TPB. Consumers who bought local had a high level of PCE (M=6.06) and an average reported influence of social norms (M=4.33). Table 42 shows the gender differences in measured psychographic variables.

Females scored significantly higher (M=3.17) than males (M=2.33) on assigned importance to buying local produce ($t(25)=3.44$, $p<.01$). The potential determinants to behavior were also examined in an effort to look for potential relationships (Table 42). Confidence was significantly correlated at the $p<.05$ level with social norms (.34) and attitude (.32), while availability and PCE were significantly correlated at $p<.05$ (.42).

Table 40

Descriptive Statistics (In-Store Study)

Variables	Nonlocal (n=4)		Local (n=47)		Total	
	M	*SD*	M	*SD*	M	*SD*
Attitude*	2.25	1.26	3.09	1.00	2.85	1.12
Social Norms**	4.50	2.52	4.33	2.08	4.33	2.04
PCE**	6.00	1.41	6.06	1.33	6.06	1.45
Availability**	4.50	1.29	4.91	1.49	4.94	1.47
Confidence**	4.50	3.32	6.40	1.19	6.30	1.50

*Scale 1 to 4 **Scale 1 to 7

Table 41

Gender Comparisons on Independent Measures (In-Store Study)

	Gender				
	Male	Female	*t*	*p-value*	η^2
Attitude	2.33 (0.89)	3.17 (0.99)	3.44	.002	.11
Social norms	4.75 (1.55)	4.28 (2.14)	-.79	.43	.00
Availability	4.67 (1.50)	4.98 (1.48)	.85	.40	.00
PCE	6.00 (1.04)	5.96 (1.46)	-.09	.93	.00
Confidence	5.93 (2.20)*	6.40 (1.23)	1.04	.30	.00

*Mean (St. Dev)

Table 42

Correlations for In-store Variables

	Attitude	Social Norm	Availability	PCE	Confidence
Attitude					
Social Norm	.22				
Availability	.12	.23			
PCE	.05	.23	.42*		
Confidence	.32*	.34*	.04	.21	

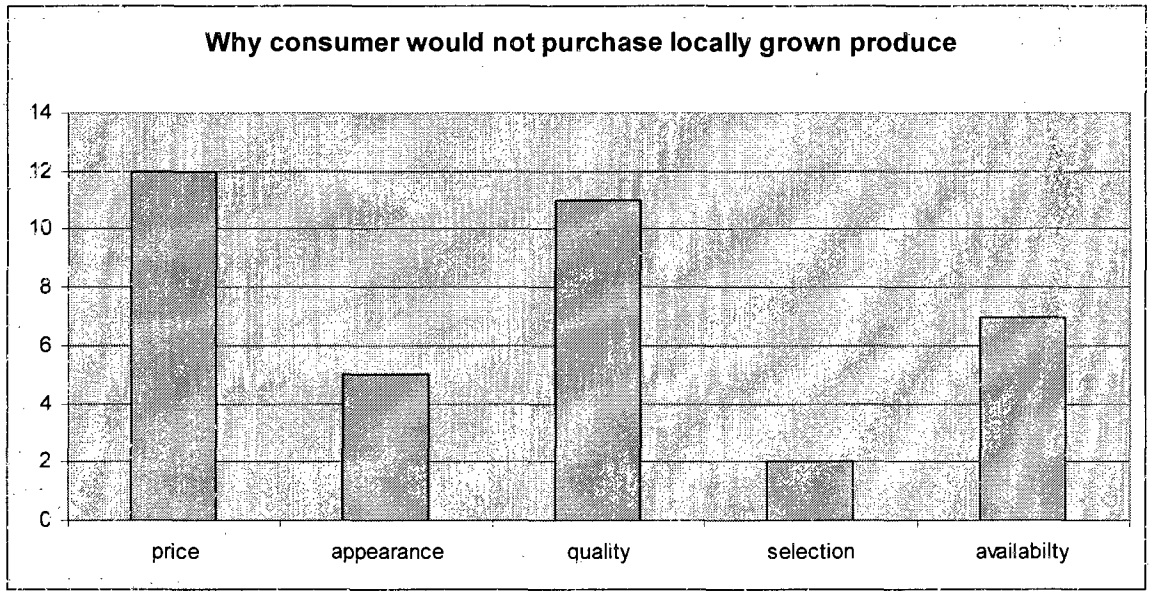
*p<.05.

Barriers and motivations. A content analysis was completed on both open-ended questions for barriers to purchase local produce and the primary motivator or benefit to purchasing local produce. In addition, the motivations for buying local were organized into either private benefit (e.g., health) or public benefit (e.g., economy). Some 32 customers reported a private benefit while 24 reported a public benefit. Compared to the university sample (105=private benefit, 44=public benefit) the store sample (43%) reported a higher percentage of public motivations than the university sample (30%) suggesting that this store may have a marketing strategy that is more likely to draw customers with these public values, and that explains why we see such strong revealed preferences toward local and organic. Figure 5 shows the number of participants naming certain barriers related to the purchase of locally grown produce. Note that the price finding is inconsistent with people's stated barriers on the survey. In fact, out of the four who did not buy local in the store, only two stated price as a potential barrier. Therefore, consumers who bought local in the experiment also stated that price might be a barrier to purchase local. The price manipulation set at 20% above and below the actual price in the experiment might not be a high enough increase to act as a barrier to purchase.

After the participants were asked to complete the open-ended question about their reason for purchasing local they were also asked how confident they were in the produce delivering that benefit. It is interesting to point out that there was no significant difference between confidence levels for those who reported the primary benefit as being either a public or private one, $t(57)=-.233$, $p=.82$. The hypothesis that private benefits are more likely to be impacted by personal choice than public ones was not supported. This suggests that regardless of benefits the consumer is seeking, confidence level can be equal across public and public benefits.

Figure 5

Barriers to Purchasing Locally Grown Produce



Discussion

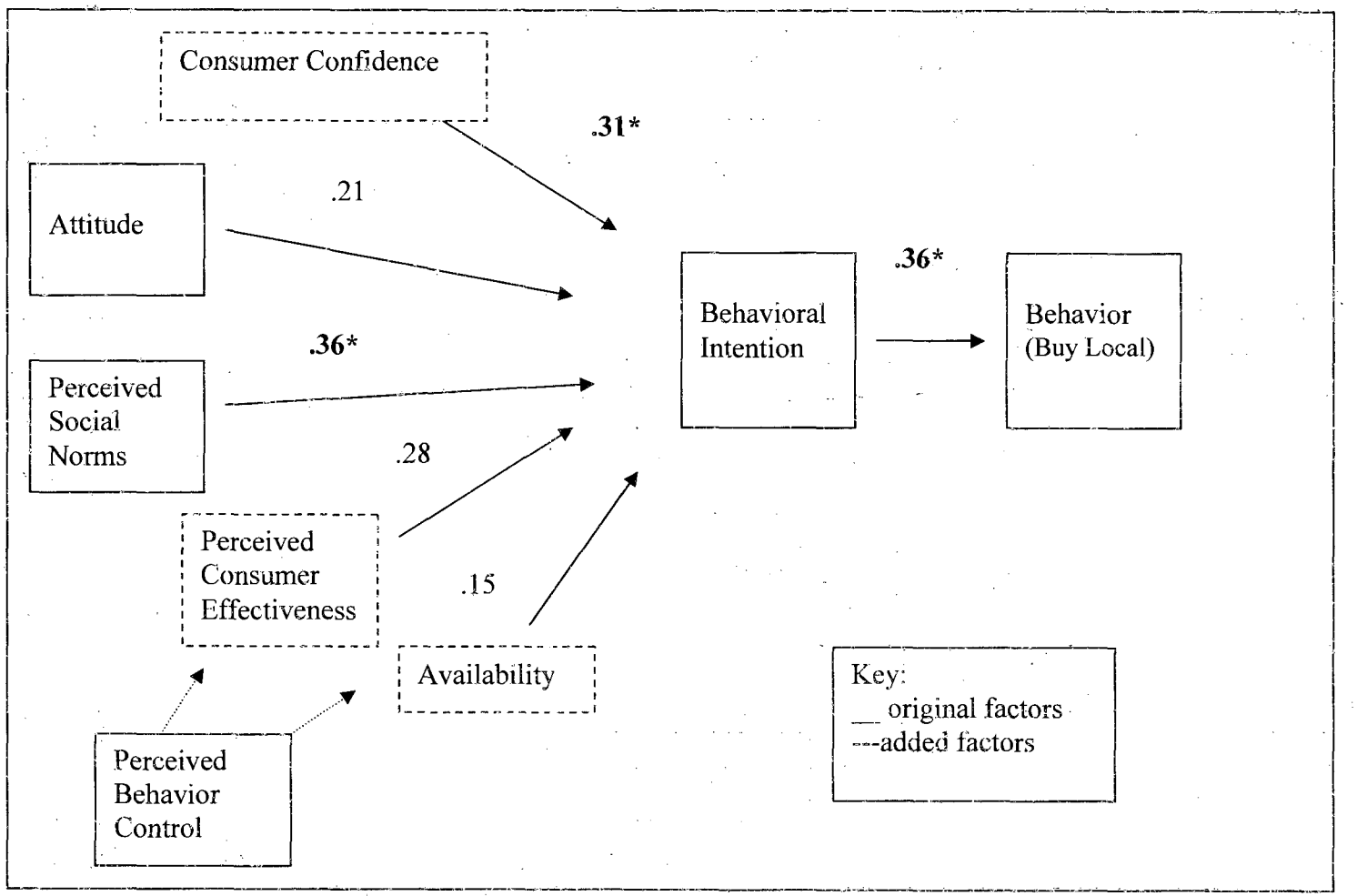
Figure 6 shows findings from the third study as they fit into the expanded TPB model. Trying to combine actual purchase data with price manipulations and self-reported survey data provided interesting results, albeit limited conclusions given the homogeneous preferences of those customers surveyed. All of these data suggest that when consumers are given the opportunity to buy local, they often do. The controlled atmosphere of this experiment allowed the leveling of availability, resulting in high local purchase. The mere fact that there was little variation in customer purchasing behavior when buying local tomatoes implies that it might be more than just price influencing customers' purchase decisions, at least in this controlled sample where the consumer's behavior might be similar to the consumer identified in the nationwide sample who shops in less conventional marketplaces.

For example, the psychographic variables presented in Table 40 might provide more insight into consumer motivations to purchase local food. Unfortunately, the lack of behavior variation as well as sample size made this hard to test statistically.

Since this was the first known project to be designed this way, there were other limitations we can report for future marketing research. The logistics of running an experiment of this scope and magnitude relied heavily on store cooperation. For this experiment this proved to be a slight hindrance. The front end checkers as well as the produce department personnel were not trained on the methods sufficiently to provide consistent support. Specifically, the organization and collection of the coupons was hard to organize across many different staff with varying time schedules.

Figure 6

In-Store Coefficients Sample TPB Model with Correlation Coefficients



On the consumer level, the high income and public value orientation of the customers in this market seemed to deter the use or influence of the coupons as a mechanism to influence shopping behavior. In addition, the experiment was run the first week of local tomato season so there was competition with home gardens as well as farmers markets. With the amount of tomato supplies coming from the households themselves (as reported by the customers with respect to gardens), it would be expected for local tomato sales to be lower in relation to other tomatoes. This was not the case, though, and local tomato sales had the highest sales on average as shown in Table 38. It should also be noted that it is rare that the customer would be faced with a decision of having all four types of the same cultivar of tomatoes at the same time at varying prices. Usually, if local tomatoes were available the produce manager would only stock local and organic of the same cultivar without needing to ship in nonlocal nonorganic, so the availability manipulated for the purpose of this research is not a realistic market condition.

In conclusion, this study suggests that despite reported and actual barriers, consumers are motivated to buy locally grown tomatoes. The primary reported barrier by the customers--price--did not seem to act as a barrier in this study since many of the consumers who reported the barrier also purchased local. The reasons for buying seem diverse and relatively balanced between public and private benefits, suggesting a need for more research to understand this phenomenon. The primary challenge in this study was little variation in behaviors to be able to categorize customers and find factors that might help to generalize and predict other local food purchase behavior. The TPB was not able to be used directly, but provided a framework of constructs that were beneficial to

explore in order to increase the understanding of consumer behavior. In some sense the primary challenge might also provide the richest data, since there is little need to encourage buying local when almost all the store's customers already buy local.

Again these finding were related to the claim in the previous chapter that found a possible set of consumers in a nationwide sample who already are shopping in less conventional marketplaces to support sustainable food systems. Stores may want to position themselves to appeal to this market segment in an increasingly complex and competitive retail market.

CHAPTER SIX

DISCUSSION OF FINDINGS

This research expands upon earlier work investigating the role of different determinants that influence consumer motivation to purchase sustainable food products. Unlike previous research, the current project focuses specifically on the motivational context for purchasing locally grown produce, not sustainable foods in general. All three studies in this project suggest that the attitude-behavior gap might be bridged by different psychosocial variables, depending on specific motivations and desired consumer assurances. In the marketplace, some of this gap could be addressed through business strategies and positioning among stores who want to offer better availability and credible assurances.

Importance of Buying Local

Researchers have previously found that only positive attitudes exist toward local foods; however, the current studies shed new light on the level of importance given to the locally grown attribute by consumers (Zepeda & Reid, 2004). Out of the three studies, only the nationwide study reported the average level of importance among all respondents with respect to the locally grown attribute to be above neutral. In summary, the average importance assigned by all participants in the nationwide study was 3.13 (on a scale from 1 to 5), while Study 1 (M=2.93) and Study 3 (M=2.85) did not surpass the neutral mark. Furthermore, when compared to other attributes associated with the

product, locally grown ranked second to last (4th) in the nationwide sample and last (5th) in the university student sample, and behind claims framed as health benefits, supports local economy, fair treatment of farm labor, and environmental impact. These findings suggest that, although the locally grown attribute has a favorable 'feeling' associated with it, the link between the additional varying attributes supposedly bundled with the claim might not be clear to consumers. The lack of assurances that these benefits are related to the locally grown claim might detract from the level of importance assigned to that claim. Alternatively, consumers might think that local already has those other benefits, so standing alone it is not an important element.

Despite the marginal importance assigned to the locally grown attribute in the three studies, consumers across all studies had relatively high interest in buying local. Similar to Pirog (2004), when holding other variables constant, consumers were generally interested in buying local. For example, in Study 1, the average reported intention to purchase locally grown produce was 5.66 on a scale from 1 to 7. Moreover, 70 percent of the nationwide sample had bought locally grown food at some time, although 62 percent of the same sample reported never buying direct from the producer or from the farmers market. Similarly, 92 percent of all customers approached in Study 3 actually bought local tomatoes rather than nonlocal, and the total pounds sold of local tomatoes during the experimental week (credible data given it represents real market transactions) was six times higher than for nonlocal tomatoes (266.51lbs versus 39.24lbs.). Therefore, the results are consistent with a highly publicized growth trend for locally sourced food and indicate there might be something more complex than simple positive attitudes about the term "local" that is motivating consumer behavior.

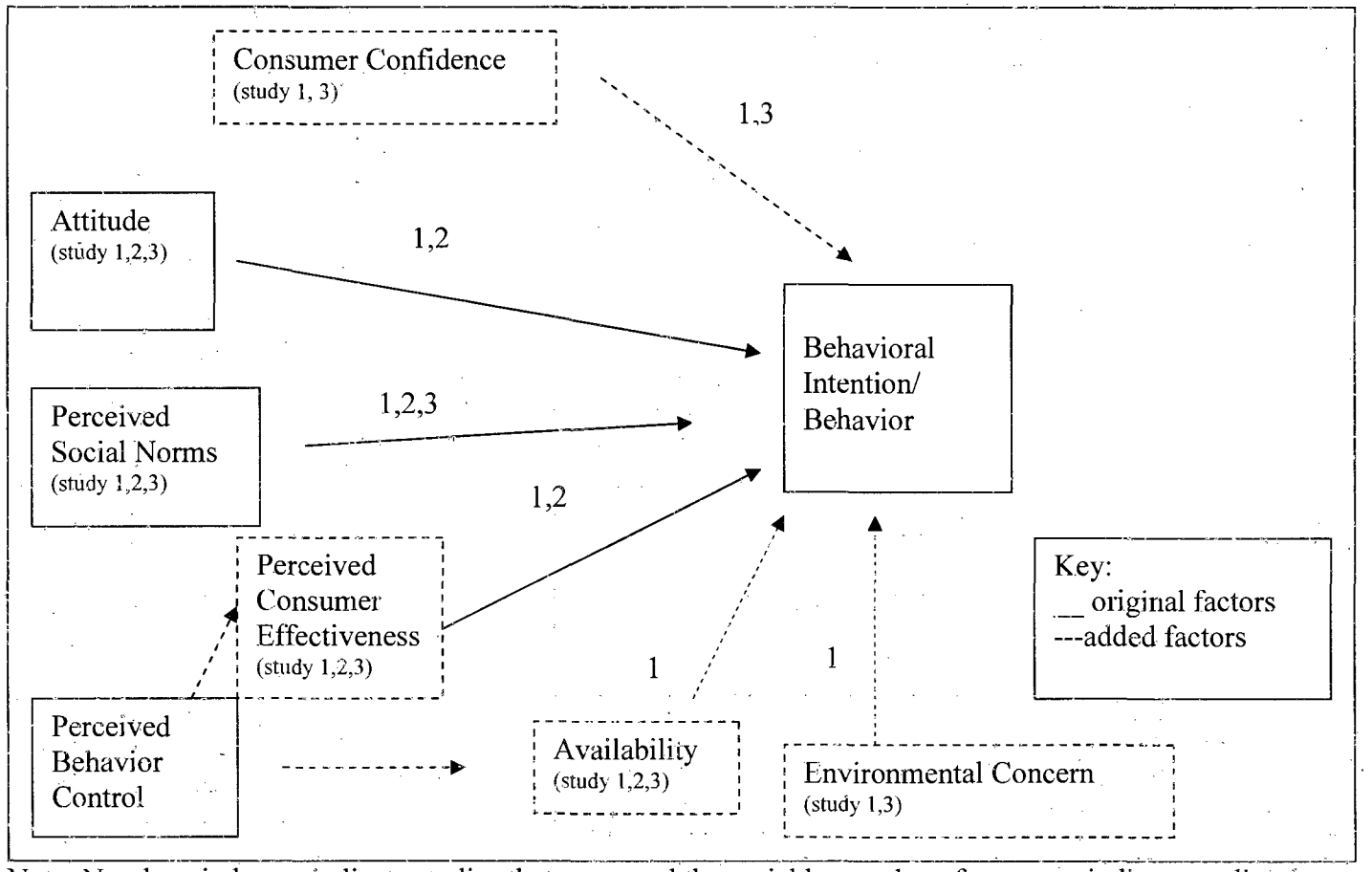
Supported Relationships in the Expanded Theory of Planned Behavior Model

Each of the studies contributed to an increased understanding of different relationships between the factors of TPB and how they interact to provide more information about the who, what, when, where, and especially why people buy locally grown foods. These relationships are depicted in Figure 7, which summarizes which studies found support for the expected relationships in the expanded TPB model.

Study 1 supported the research done by Vermier and Verbeke (2008), similarly finding that both social and personal determinants, in addition to attitude, aid in prediction of consumer intention to purchase sustainable products. Incorporating consumer confidence into the TPB model greatly enhanced the model's ability to predict intention to purchase locally grown produce. Similar to Vermeir and Verbeke (2008), different consumer segments (characterized by confidence and environmental values) also varied in terms of which determinants helped to predict behavioral intention. One aspect of this study that is unique to the literature--dissecting the different types of benefits (private and public) influencing motivation to purchase local--revealed significant factors that aided in understanding predictors of behavioral intention. Therefore, different aspects related to the benefits of the complex set of attributes that consumers may associate with local also influence the impact of the TPB determinants. Recognizing that these differences exist and can be specific to different consumer segments is a significant advancement in the field. Consumer confidence regarding all

Figure 7

Relationships between All Three Studies and TPB Model



Note: Numbers in boxes indicate studies that measured the variable, numbers for arrows indicate studies that supported the relationship.

attributes assigned to local produce (health, environment, social, and economy) was significant suggesting that regardless of motivation to purchase, it is necessary for consumers to feel confident that the product will provide the benefit that they want and that the local attribute is monitored so that assurances are sufficient to bolster development of this market segment.

Study 2 evaluated the role of TPB factors in relation to reported shopping behavior as well as willingness to pay for the assurance that specific produce options are locally grown. This study builds on the results from Study 1, finding the TPB factors to play a role in reported behavior and willingness to pay, while including a much more diverse demographic sample aiding in the ability to generalize the findings. The ability to correctly classify consumers who source their produce directly was enhanced by including other factors in the TPB and not just attitude. In other words, consumers who shopped directly for their produce more often (primarily and secondarily) were influenced both by social norms and perceived availability, as well as attitude, and seasonal direct purchase location was also predicted by PCE. Therefore, the level of engagement that a consumer reported toward locally grown food provided different relationships with the variables in the TPB model. Also, attitude, social norms, and PCE significantly predicted willingness to pay for locally grown apples, accounting for 8% of the variance.

Study 3 provided a complementary retail example to verify how consumers who shop at certain locations are motivated to buy local--essentially a consumer behavior analysis within a segment of "controlled" consumers. A controlled atmosphere that is primarily populated with a specific set of consumers with similar motivations and

demographics allowed for the direct exploration between the TPB variables and actual consumer behavior. Controlling the market availability and other differences in consumer segments resulted in the revealed behavior that consumers will overwhelmingly buy locally grown items when available and at venues besides direct sources, but which provide some assurances to consumers (e.g., health and natural food stores). In addition, the locally grown option often prevailed regardless of price when compared to nonlocal items in this targeted retail location even though other sales data suggest that price did affect sales volumes in the broader tomato category. In sum, as one of the few existing projects able to track actual buying behavior and survey a population sample, and to relate both to the TPB model, the findings provide a platform to frame and better structure the methodology of future in-store studies.

Convergence of Findings and Research Questions

Figure 7 shows the relationships between the TPB factors and the different behavior dependent variables for all three studies. The different outcome variables for each of the three studies makes comparison of the models difficult, but it is important to note general trends in the findings. All studies found that more than one of the factors of the TPB aided in the predictability of behavior intentions and/or behaviors. Social norms and perceived consumer effectiveness had the most globally significant relationship across all studies, but depending on the motivations and context of each study, all components acted as explanatory variables in at least one study. Availability and environmental concern seemed to be the least successful at predicting behavioral outcomes, with availability only helping to classify seasonal direct shoppers in Study 2 and environmental concern only correlating with intentions to buy in Study 1.

The collection of results across all studies provided interesting answers to the primary research questions of the project addressed in Chapter 2. In response, the TPB proved to be a good model to explore local food purchasing behavior although the mixed results suggest that more investigation should be undertaken. The extended model used in Study 1 provided strong support for adding consumer confidence in the equation when looking at potential motivators of and barriers to local food purchase. In addition, there seems to be great variation in predictive validity of the TPB factors on different behavioral outcomes depending on the survey sample and even within a survey sample.

Overall, the studies indicate that local food consumption is based on a complex and dynamic decision-making process that is somewhat dependent on the market segment explored to understand consumers' motivations in the context of the markets they use and motivations that drive their purchases. It seems that local is a somewhat unique purchase, separate from other sustainable food items. A diverse set of motivations involving both private and public benefits drives consumers to purchase local foods. Thus, a greater set of predictors than just attitude is warranted to increase the understanding of behavioral intention and local purchase behaviors. In some cases, when including factors in the expanded TPB model other than attitude, the relationship between attitude and behavior was no longer significant. In fact, the most consistent predictor in Study 1 was consumer confidence. Hence, the TPB increased the understanding of motivations to purchase, suggesting that different predictors might be unique for different types of perceived benefits. Therefore, it could be important to look at perceived benefits for different consumers in order to affect specific behavior change.

Similar to Robinson and Smith (2002), the TPB is a good model to explain intention (20-36 percent variance explained) and even to predict who might source their produce direct (56-60 percent correctly classified), but it is not necessarily effective in explaining variance in willingness to pay for locally grown produce. Although previous studies reported that willingness to pay for sustainable food products does not necessarily lead to positive behavioral intention, it does provide some needed information about economic relationships with local food claims (Thompson & Kidwell, 1998). In addition, situational determinants such as perceived availability did not necessarily have a strong relationship with local food purchase intentions when other factors were included, but personal determinants such as consumer confidence were strong indicators of behavior. One possible explanation is that consumer confidence is linked to the concept of trust, which is what the food industry is beginning to attribute the rise of the local food market to (Produce News, Fall 2009).

The nature of the Theory of Planned Behavior is to look at predictors of behavioral intention, and thus behavior, but it is important to note the possibility that the direction of causality is reversed. Social psychological research has many theories that explore the attitudes-follow-behavior phenomenon. For example, cognitive dissonance theory suggests that tension occurs when we are aware that our behavior might be contrary to our attitudes, and in an effort to reduce such tension we may adjust our thinking or attitudes to make them consistent with our behavior (Festinger, 1957). Furthermore, one example of this theory related to locally grown food could be a socially influenced trip to a farmers market resulting in a purchase. If the behavior is not already

aligned with a consumer's current attitudes toward that item, the thinking might change to reflect a positive attitude toward the purchased item after the experience.

Limitations

Each study in this coordinated research project had unique limitations. The most comprehensive set of predictors was in Study 1 which was based on a student sample. It is possible that participants in this age group might not be as engaged in the topic or be primary shoppers of a family household. The national sample was limited in the number of variables that could be included, which minimizes the reliability of the predictors in the TPB model. Finally, the in-store sample (which had the only actual behavior measure in it) had a limited sample size, demographics that are not representative of the general population, and a very small comparison group of nonlocal purchasers. Nevertheless, the convergence of the three studies provides some confidence in the major findings.

Conclusions and Future Directions

Despite the growing market trend toward "Being Green," sustainable foods still hold a relatively low market share (Fromartz, 2009). This study illustrates that pinpointing factors in the TPB that predict motivation to purchase, willingness to pay, and shopping behaviors aids in bridging the gap between stated attitudes and actual purchase behaviors. These conclusions, which all three studies at least partially endorse, reinforce the argument that understanding motivations behind purchase behavior is extremely important.

Understanding different predictors of purchase behavior, in different contexts, can also facilitate the framing of future research. The original model of TPB proved relatively useful in prediction of local food behaviors, but it would seem that the traditional model

with the addition of confidence would be an improvement in explaining information about purchase behavior. The importance of these factors suggests that strengthening consumer confidence can clarify the potential vagueness regarding the locally grown claim by providing more assurances to the consumers about the authenticity of the local label and its public and private benefits. Perhaps bundling local labels with other claims or providing more oversight or market coordination of the local claim (such as state branding programs) could increase consumer confidence and continue to increase the market share of locally grown food.

This research has also suggested that there are many different motivations for purchasing local and, therefore, there is no one way to target the entire audience in a "one size fits all" format in order to increase sustainable food consumption. It has become clear that targeting consumers based on demographics is not the best strategy to understand motivations (Robinson & Smith, 2002). This study expands on these limitations by suggesting that not only should we identify consumers based on psychographics, but also by current level of engagement in locally grown food. The perceived benefits and consumer confidence in those benefits have already been shown to vary according to level of engagement, warranting further investigation. Results across all samples suggest that social norms, consumer confidence, and PCE are all excellent predictors to capitalize on in order to tailor the marketing interventions that should be effective.

Again, despite the fact that a large majority of the participants in all studies reported buying local produce, the important factor seems to be to understand the different levels of involvement of the consumer and how the predictors of that

involvement might vary by group. Future work should expand on this general finding with a large national sample that includes all of the variables measured in Study 1 and the ability to examine the observed relationships in separate segments of the consumer population. Specifically, a latent class analysis using the nationwide data from Study 2 could describe unique relationships with the TPB variables and behavior in different consumer segments. Using this information to develop an intervention to increase consumption of locally grown produce would encourage different segments not currently engaging in this food system to gain both its private and public benefits.

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APPENDIX A
PILOT and STUDENT SURVEY

Instructions: Please read the following questions and answer the questions to the best of your ability.

Suppose you are shopping for fresh produce, and are deciding what to buy. Please indicate how important the following factors are in your decision (check one for each). <THESE ARE THE ATTITUDE VARIABLES>

	Not at all important	Somewhat unimportant	Neither important or unimportant	Somewhat important	Extremely important	I never think about that issue when choosing fresh produce
That it is locally grown *(LOCAL)*						
That it has proven health benefits *(HEALTH)*						
That is caused minimal environmental impact *(ENVIRONMENT)*						
That it supports the local economy *(ECONOMY)*						
That farm labor was treated fairly during production and harvest *(SOCIAL FAIRNESS)*						

Please read each statement and check the number that best describes your feelings.

<Perceived Consumer Effectiveness (PCE) Questions>

- PCE1: I believe that by purchasing certain kinds of food, I can have a substantial positive impact on my health.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE2: I believe that my purchase decisions really have no impact on social fairness (e.g., fair treatment of workers, practices that respect human rights).

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE3: I believe that what I choose to buy and where I choose to buy fresh produce have little influence on the local economy.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE4: When I buy products, I try to consider how my use of them will affect the environment and other consumers.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE5: I believe that the natural environment is influenced by so many factors that it is not affected by my decisions to buy or not to buy certain things.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE6: I believe that by choosing to buy or not to buy certain FOODS, I can have a positive impact on the natural environment.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE7: I believe that I can make a statement about social fairness (e.g., fair treatment of workers, practices that respect human rights) by carefully choosing the FRESH PRODUCE I buy.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE8: I believe that my health is largely determined by factors that have nothing to do with the types of food I choose to purchase.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- PCE9: Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

<Environmental Concern Questions>

- EC1:One of the most important reasons to conserve is to preserve wild areas.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- EC2: We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- EC3: I would be willing to make personal FOOD CONSUMPTION sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- EC4: Endangered species should be protected but NOT at any cost.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- EC5: Global climate change/global warming is a real problem that human kind faces

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- EC6: I believe human FOOD PRODUCTION activities are significantly contributing to global climate change/global warming.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

<Social Norm Questions>

- SN1: People who are important to me influence my buying behavior, and think I should buy local food products.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- SN2: My family influences my buying behavior, and thinks I should buy local food products.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- SN3: Society influences my buying behavior and thinks I should buy local food products.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- SN4: Friends influence my buying behavior and think I should buy local food products.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

<Availability Questions>

- Avail1: I believe that I could acquire local food products in my neighborhood.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

- Avail2: I believe local food products are easily available.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

<Consumer Confidence Questions>

- CC1: How confident are you that local food products are effectively ecologically produced?

1	2	3	4	5	6
Not Confident At All					Extremely Confident

- CC2: How confident are you that local food products stimulate rural employment?

1	2	3	4	5	6
Not Confident At All					Extremely Confident

- CC3: How confident are you that local food products are better for your health?

1	2	3	4	5	6
Not Confident At All					Extremely Confident

- CC4: How confident are you that local food products provide a fair income for the producer?

1	2	3	4	5	6
Not Confident At All					Extremely Confident

- CC5: How confident are you that local food products are a better choice for me?

1	2	3	4	5	6
Not Confident At All					Extremely Confident

CONSUMER BEHAVIOR (Survey Questions not on pilot survey)

<Outcome Variables>

1. Have you purchased any of the following type of fresh produce before (check one for each)?

	Yes	No	I'm not sure
Locally grown fresh produce			
Organic fresh produce			
Locally grown organic fresh produce			

2. What percentage of your fresh produce purchases on a weekly basis are:

LOCAL:				ORGANIC:			
Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring

<Benefits>

3. What is the main reason for you purchase of locally grown produce?_____

<Barriers>

4. What might keep you from buying locally grown produce on a specific shopping trip?

_____

<Behavioral Intention>

5. I would buy *local fresh produce* if available where I shop for food.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

APPENDIX B

Nationwide items

<Attitude Questions>

1. Suppose you are shopping for fresh produce, and are deciding what to buy. Please indicate how important the following factors are in your decision (check one for each).

   Not important at all
   Somewhat unimportant
   Neither important or unimportant
   Somewhat important
   Extremely important
   I never though about that issue when choosing fresh produce

   Knowing…
   - that is it locally grown
   - that it has proven health benefits
   - that it caused minimal environmental impact
   - that it supports the local *economy*
   - that farm labor was treated fairly during production and harvest

<PCE, Social Norm, and Availability Questions>

2. Please read each statement and check the number that best describes your feeling.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

- I believe that by purchasing certain kinds of food, I can have a substantial positive impact on my health.
- I believe that what I choose to buy and where I choose to buy fresh produce can have an impact on the local economy.
- I believe that by choosing to buy or not to buy certain food, I can have a positive impact on the natural environment.
- I believe that I can make a statement about social fairness (e.g., fair treatment of workers, practices that respect human rights) by carefully choosing what produce I buy.
- Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.
- People who are important to me influence my buying behavior, and think I should buy sustainable food products.

<Behavioral Outcomes>

Where do you usually purchase your fresh produce (fruits and vegetables)? Please select one for Primary Source (over half of your purchases), one for Secondary Source (less than half of your purchases, at least monthly), and all that apply for Seasonal Source and Never.

Primary Source (over half of your purchases) <select one>

Secondary Source (less than half of your purchases, at least monthly) <select one>

Seasonal Source <select all that apply>

Never <select all that apply>

Supermarket and supercenter (e.g., Safeway, Wal-Mart)

Health/Natural Supermarket (e.g., Whole Foods)

Convenience/corner stores (smaller stores with limited selection, e.g., Seven-Eleven)

Farmer's Market

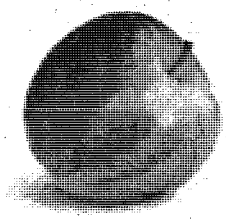
Food Co-ops

Direct from producers (At farm/ranch, Internet, Community Supported Agriculture)

Specialty food store (gourmet, ethnic)

APPENDIX C

Apple1



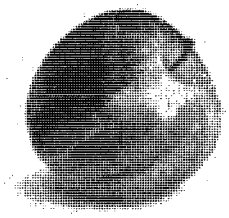
$1.79/lb

Product of Chile

I will buy this apple.

☐

Apple2



$2.49/lb

Locally Grown

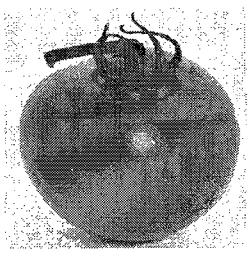
I will buy this apple.

☐

Neither.

☐

Tomato1



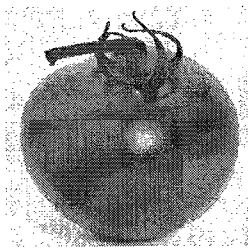
$1.79/lb

Product of Mexico

I will buy this apple.

☐

Tomato2



$2.49/lb

Locally Grown

I will buy this apple.

☐

Neither.

☐

APPENDIX D

APPENDIX E

DISCOUNT COUPON

MN Grown
Organic TOMATO

AMOUNT_____

Good for up to 5lb # 01-4-___
Redeemable only TODAY 8/18/08

APPENDIX F

1. **Do you ever buy *locally grown* produce?**
   YES NO
   Where? (circle all that apply)
   a. **Lunds/Byerlys**
   b. **Other grocery store**
   c. **Farmers market**
2. **Please indicate how important it is to you to buy produce that is *locally grown*. (choose one)**
   a. **Not important at all**
   b. **Somewhat unimportant**
   c. **Neither important or unimportant**
   d. **Somewhat important**
   e. **Extremely important**
   f. **I never think about that issue when choosing fresh produce**

What is the main reason for your purchase of *locally grown* produce?_____

Why wouldn't you purchase *locally grown* produce?_____

4. I believe that *local food* products are easily available

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

5. People who are important to me think I should buy *local food* products.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

6. Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

7. What is your income level?

0-27,500 27,500-57,500 57,500-87,500 over 87,500

8. I am (circle one)
A) single under 40 B) married/partnered, no kids C) married/partnered, young kids D) married/partnered, older kids in home E) married/partnered, kids grown F) single over 40