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# Examining consumers' cognitive and behavioral responses to belief disconfirmation

Aadel A. Darrat

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**EXAMINING CONSUMERS' COGNITIVE AND  
BEHAVIORAL RESPONSES TO BELIEF  
DISCONFIRMATION**

by

Aadel A. Darrat, B.S., M.B.A.

A Dissertation Presented in Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Business Administration

COLLEGE OF BUSINESS  
LOUISIANA TECH UNIVERSITY

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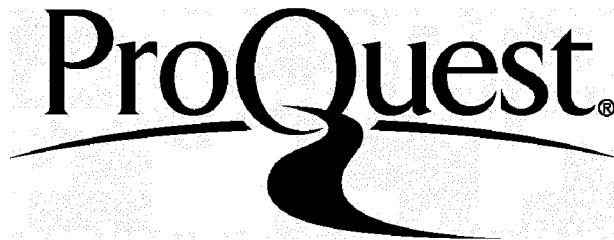
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Date

We hereby recommend that the dissertation prepared under our supervision by Aadel Darrat

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be accepted in partial fulfillment of the requirements for the Degree of Doctor of Business Administration

Bruce Alford  
Dr. Bruce Alford Supervisor of Dissertation Research  
Barry Babin  
Dr. Barry Babin Head of Department  
Marketing and Analysis  
Department

Recommendation concurred in:

Doug Amyx  
Dr. Doug Amyx

Barry Babin  
Dr. Barry Babin

Jerome Tobacyk  
Dr. Jerome Tobacyk

Advisory Committee

Approved: Doug Amyx  
Director of Graduate Studies, Dr. John Francis

Approved: Sheryl S. Shoemaker  
Dean of the Graduate School, Dr. Sheryl Shoemaker

Christopher Martin  
Dean of the College, Dr. Christopher Martin

## **ABSTRACT**

This study explores possible reasons for why consumers persist in their beliefs despite being exposed to substantial disconfirming evidence. The theory of cognitive dissonance (Festinger 1957) provides an important foundation for the pervasiveness of the confirmation bias and belief perseverance. Four main research paradigms of cognitive dissonance theory are discussed: free choice, induced or forced compliance, belief disconfirmation, and hypocrisy. Confirmation bias and belief perseverance are positioned in the belief disconfirmation paradigm.

Confirmation bias refers to the general tendency to readily accept evidence that supports one's beliefs and to reject or avoid evidence that goes against such beliefs. Belief perseverance, a phenomenon attributed to the confirmation bias, is the tendency to continue believing what we do in the face of disconfirming evidence. This study assesses whether contrary evidence has an effect on consumer beliefs regarding the perceived benefits of organic food consumption.

Dissonance research in marketing has primarily focused on consumer decision making and post-purchase regret. For this reason, the study examines the impact of pre-purchase cognitive dissonance using a mixed methods approach. Subjects are exposed to considerable disconfirming evidence, and subsequent belief perseverance (or change) is

examined. These effects on cognitive dissonance and purchase behavior are tested. A qualitative assessment of open-ended responses regarding instances of belief perseverance is also conducted; results and key managerial implications are discussed.

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*“One who does not thank people does not thank God.”*  
–Prophet Muhammad (S.A.A.W.)

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# CHAPTER ONE

## INTRODUCTION AND CONTRIBUTIONS

### Belief Perseverance

*“If one were to attempt to identify a single problematic aspect of human reasoning that deserves attention above all others, the confirmation bias would have to be among the candidates for consideration” (Nickerson 1998, 175).*

Accumulated evidence demonstrates that purchasing behaviors are influenced by consumers’ personal values, cognitions, and experiences (Cummings and Venkatesen 1976; Pious 1993; Benoit and Benoit 2008). Dramatic advancements in information accessibility have made consumers more aware of third party evaluations of brands. For instance, consumers can readily access expert opinions, user experiences and/or product reviews online. That said, what occurs when consumer beliefs about a brand are disconfirmed by new evidence? Do information credibility and brand involvement matter? Do consumers persist in their attitudes about the brand, or do they change their behaviors based on the new information? Can consumer beliefs and opinions about brands impede their rationality? This research intends to address these questions.

Belief perseverance represents a general psychological phenomenon that involves the tendency of consumers to cling to their belief systems even after receiving new information that contradicts or disconfirms those beliefs (Anderson 2007). In other words, belief perseverance describes the tendency to continue believing and behaving in ways that contradict disconfirming evidence.

Belief perseverance is typically tested using an experimental setting known as the debriefing paradigm (Ross, Lepper and Hubbard 1975; Anderson, Lepper and Ross 1980; Anderson 1982; Misra 1992). In this brand of experimentation, false evidence (unknowingly to subjects) is presented regarding a particular hypothesis, after which subjects' attitude change is measured. Subjects are then 'debriefed' by their experimenters when the fictitious evidence is brought to light and completely discredits the basis for any possible changes in belief. The last stage of the experimentation measures attitude change once more to determine if incorrect beliefs formed by the subjects persist even after standard debriefing.

Ross, Lepper, and Hubbard (1975) conducted experimental research that revealed the strength of belief perseverance. They asked subjects to distinguish between real and fake suicide notes and provided them with random feedback afterward; some of the subjects were informed that they succeeded, while others were informed that they failed at the given task. Even after being fully debriefed, subjects were still influenced by the feedback they had previously received. That is, subjects still believed that they were better or worse at the given task depending on their initial feedback.

In another debriefing study, Anderson, Lepper, and Ross (1980) exposed subjects to two case studies that portrayed either a positive or a negative relationship between risk taking and success as a firefighter. The notion of belief perseverance was supported regardless of the particular relationship "evidence" that the subjects were exposed to, i.e. whether risky firefighters are better at their jobs or vice-versa. Experimental results also suggest that belief perseverance is enhanced when subjects are explicitly asked to explain the evidence they were given. In addition, the researchers



conclude that “initial beliefs may persevere in the face of a subsequent invalidation of the evidence on which they are based, even when this initial evidence is itself as weak and inconclusive as a single pair of dubiously representative cases” (Anderson, Lepper and Ross 1980, 1045).

Subsequent research by Anderson (1982) reveals that subjects that were encouraged to consider both positive and negative relationships between risk preference and firefighter success showed significantly less belief perseverance. In one of the very few marketing papers that tests belief perseverance, Misra (1992) examines subject responses to rumors about restaurant and retailing chains and provides results to further support the underlying phenomenon of confirmation bias and belief perseverance.

According to Godden (2012), belief perseverance presents two issues regarding reasoning and rationality. The first issue is the inherent difficulty of “describing the nature and extent of the phenomenon, and of explaining how and why it occurs” (Godden 2012, 51). The second issue with research on belief perseverance is the normative concern of “whether, and to what extent, belief perseverance is rational” (Godden 2012, 51). The focus of this dissertation is on the first issue in addition to investigating the impact of belief perseverance on salient marketing outcomes.

### **Confirmation Bias**

Confirmation bias is a one-sided case-building process that involves the unwitting selectivity in the acquisition and use of evidence (Nickerson 1998). In other words, confirmation bias represents people’s general tendency to 1) readily accept evidence that supports their beliefs, and 2) reject evidence that goes against their beliefs. People might try to discredit evidence that disagrees with their beliefs, and/or they might choose to

avoid exposure to the disconfirming evidence all together. Confirmation bias has become somewhat of a “catch-all phrase” that incorporates biases in both information search and interpretation (Fischhoff and Beyth-Marom 1983). However, according to Plous (1993), the term typically refers to a preference for information that is consistent with a hypothesis instead of information which opposes it. This reality is contrary to the standard rules of philosophy of science that lay a heavy emphasis on testing hypotheses by trying to refute or falsify them. Scientific researchers are also people and are therefore prone to exhibiting confirmation bias; they should be extra cautious with their data search and their interpretation.

Sir Francis Bacon is one of the earlier prominent thinkers who identified this particular type of cognitive bias centuries ago in his *Novum Organum Scientiarum*, or ‘New Instrument of Science’ published in 1620:

“The human understanding when it has once adopted an opinion ... draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects” (cited in Lord, Ross and Lepper 1979, 2098).

Positive test strategy is an intentional search for confirming evidence (Kahneman 2011). That people/researchers tend to seek data that are more likely to be compatible with their beliefs is well-known. For example, according to DeMers (2015), confirmation bias is one of the most common cognitive biases for business owners. Entrepreneurs, especially those who are passionate about their business, have a high tendency to interpret information based on previous beliefs or assumptions, rather than letting the

data speak for themselves. Confirmation bias commonly leads entrepreneurs to interpret qualitative data, such as survey comments, in a way that endorses their preconceived notions, i.e. readily accepting supportive data and dismissing, or arguing against, the validity of any disconfirming data. Hence, DeMers (2015) recommends that entrepreneurs should let the numbers do the talking and overcome confirmation bias by relying more on quantitative rather than qualitative data.

Mynatt, Doherty, Tweney (1977; 1978) suggest that confirmation bias is difficult to eliminate. In their 1977 study, they designed a simulated research environment in which they asked subjects to seek out particular laws of particle motion. The subjects were randomly provided with one of three separate directives that consisted of instructions to confirm, instructions to disconfirm, or instructions to test. Depending on which instructions were received, the subjects were informed that the fundamental duty of a scientist is 1) confirming/supporting theories and hypotheses, 2) disconfirming/disproving theories and hypotheses, or 3) testing theories and hypotheses. Results showed that subjects were much more likely to search for confirming evidence regardless of which instructions were received. Even the subjects who received instructions to disconfirm tended to exhibit substantial confirmation bias during the discovery task (Mynatt, Doherty and Tweney 1977).

In their subsequent research, Mynatt et al. (1978) examined instructions to disconfirm even further using a similar study design. However, this time the subjects were randomly assigned to one of only two groups. The subjects either did not receive any instructions at all (control group), or the subjects received very thorough instructions to disconfirm that stressed the importance of falsification and testing

multiple hypotheses. Yet, again, the extensive instructions to disconfirm had very little or no effect on trying to diminish the inherent confirmation biases of the subjects (Mynatt, Doherty and Tweney 1978).

How does confirmation bias affect consumers? Due to this particular type of cognitive bias, consumers find it easier to accept information that confirms what they already believe regarding products, services, prices, preferred brands, etc., instead of having to reformulate their views. Conversely, consumers may tend to ignore information that contradicts their beliefs. As inquisitive human beings constantly striving to make connections, consumers are very good at finding patterns where they are not, and this may lead to a warped understanding of reality. Unfortunately, many consumers would likely ignore any information which may prove them wrong. Hence, overcoming confirmation bias can be a problem for marketers who aim at providing objective information that contradicts consumer beliefs.

### **Motivation for the Study**

Consumers make purchases in the pursuit of value. This pursuit is driven by consumers' recognition of a value deficit or imbalance. Thus, the goal of marketing is to create value for consumers. Bazerman (2001) argues for a more consumer-focused approach of consumer research to help people make wiser decisions. With an ethical, consumer-centric mindset, the goal of marketing should be to create true and unbiased value for consumers. What if consumers hold incorrect beliefs regarding products, services, prices, brands, etc.? The effects of this quandary may be in favor or not in favor

of marketers. At any rate, marketers should feel a sense of responsibility in ensuring that their customers are well-informed and aware of the facts pertaining to their value offerings.

In particular, according to the U.S. Department of Agriculture (USDA), the goal of organic foods and organic farming is to “integrate cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.” Products are only labeled “USDA organic” when they contain 95% or more certified organic contents.

People who buy organic food pay premium prices and cite the following reasons for doing so (Watson 2012):

- 1) Organic foods are “safer,” e.g. organic fruits and vegetables are generally grown without chemical fertilizers and pesticides, and organically raised livestock are not given any growth hormones or antibiotics.
- 2) Organic farming practices are “kinder to the environment,” i.e. they are designed to be more sustainable by emphasizing conservation and reducing pollutants.
- 3) Organic foods are “healthier,” i.e. organic foods are more nutritious than conventionally farmed foods.

Watson (2012) asserts that of these three reasons, the healthy/nutritional claims for organic foods have been the most unsubstantiated. For example, Smith-Spangler et al. (2012) evaluated extensive data by conducting a meta-analysis that included 237 studies of foods and of human diets. The noteworthy research endeavor was not outside financed for the prevention of conducting biased research (Chang 2012). The researchers, from

Stanford University, concluded that organic fruits and vegetables are not more nutritious than conventionally farmed produce. Furthermore, results showed that there are no significant health advantages to organic meats, and that organic foods are not any less likely to be contaminated by dangerous bacteria such as E. coli. Organic produce, however, did have 30% lower risk of contamination with detectable pesticide residue compared to conventional produce (Smith-Spangler et al. 2012). Nonetheless, Dena Bravata, one of the Stanford University researchers, asserted that there is no robust evidence to choose organic over conventional foods if the choice is based mainly on the idea that organic foods would provide more nutrients (Chang 2012).

How will organic food buyers, especially those who strongly believe that organic food is more nutritious than conventional food, react to this disconfirming information? Will their beliefs change or will they persevere? Would buyers of organic food continue to buy (and pay more for) organic if they become aware of this disconfirming information? These are some of the issues that have inspired this research endeavor.

### **Research Questions**

Can varying message components such as the source of information/credibility and message strength affect people's knowledge change? One potential response to this question is perhaps not. Through the study of belief change in the debriefing paradigm, mentioned previously, beliefs have been documented to change and persevere in the face of even weak initial "evidence" (e.g. Anderson, Lepper and Ross 1980). Is the same true for belief change outside the realm of the debriefing paradigm? Can varying strength of actual evidence affect consumer beliefs?

Peeters (1983) provides an especially interesting direction for future research on belief perseverance in the realm of consumer behavior that she labels “hypothesis-testing.” In her investigative framework, subjects are presented with a modern hypothesis to test. Evidence provided would need to include an explanation for the subjects' previous beliefs along with even more influential opposing or disconfirming evidence regarding what “should” be believed. She suggests that such a technique could be effective in bringing about belief change. If subjects accept the new hypothesis for testing, then they will tend to begin collecting confirming evidence for the new hypothesis. Thus, through this hypothesis-testing experience, subjects may attain a sense of awareness of their current beliefs in tandem with why they should change their beliefs in light of the new evidence. With the guidance of the experimenter, the subjects will essentially be doing a form of process debriefing on their own (Peeters 1983).

The study will use 1) a partial hypothesis-testing framework to examine the effects of belief disconfirmations and 2) a qualitative assessment of belief change resistance. The study will investigate the research questions regarding dissonance and belief perseverance which can have significant implications for marketing and consumer behavior:

**RQ1:** *Can disconfirming evidence exposure induce considerable dissonance? If so, how does varying the strength of disconfirming factual evidence affect consumer beliefs?*

**RQ2:** *What are the effects of dissonance (consonance) resulting from belief disconfirmation (confirmation) on purchase-related outcomes?*

**RQ3:** *Why do consumers continue to hold onto their beliefs even though they are exposed to robust, disconfirming evidence that suggests a belief change is warranted?*

In summary, the ensuing research will assess whether robust, disconfirming evidence has an effect on consumer beliefs. The investigation will attempt to induce a state of dissonance via belief disconfirmation and will also evaluate salient marketing outcomes including perceived value, purchase intention, and word-of-mouth. Furthermore, the research will attempt to discover reasons why consumers might persist in their inaccurate beliefs despite being exposed to substantial disconfirming evidence.

### **Contributions of the Research**

#### *Theoretical Contributions*

This research aims at linking the pervasive psychological phenomena of confirmation bias and belief perseverance to Festinger's (1957) theory of cognitive dissonance. Consumer research on cognitive dissonance has limited the scope of this extensive theory by narrowly focusing on occurrences of dissonance after a consumer has made a decision or a purchase. Although available research on post-purchase dissonance (or buyer's remorse) provides important theoretical and practical implications, the current study argues that dissonance may arise in numerous ways other than decision making.

Among the main goals of this study is to demonstrate that dissonance could arise prior to a purchase due to belief disconfirming evidence regarding perceived product benefits. This research attempts to invoke dissonance by presenting people with disconfirming evidence about the perceived benefits of buying and consuming organic foods. An empirical test of dissonance provocation resulting from perceived belief



disconfirmations is conducted. Moreover, the research examines the impending effects of dissonance on purchase-related intentions. Consequently, this research will offer and use an alternative approach to testing cognitive dissonance theory.

An examination of extant literature reveals a lack of existing scales for measuring a person's proclivity to belief perseverance. A qualitative investigation of why consumer beliefs persevere could initiate a solid foundation for developing a new scale of belief perseverance. Developing such a scale would be a valuable tool for consumer research aiming to identify and examine obstinate consumer behavior.

#### *Managerial Contribution*

According to Hunt (1970), academic research on cognitive dissonance could only benefit marketing practitioners if it provides guidance as to what can and should be done about a customer's dissonance. Marketing managers are cognizant that being able to successfully reduce dissonance levels of their patrons can provide a very vital competitive advantage. Answering the question of why customers' erroneous beliefs can persist despite exposure to substantial disconfirming evidence should offer important implications for marketing strategy.

For instance, it can be argued that consumers tend to adopt inaccurate information when such information promotes a potentially ingratiating self-concept. Given that organic food consumption is generally considered prosocial, and therefore potentially ingratiating, consumers may aspire to be perceived as someone who consumes organic food. As such, consumers with a positive orientation toward organic food promotion, in particular, may make themselves vulnerable to accepting superficial information or even information that is known to be incorrect if that information promotes their self-image. It

is conceivable that this effect would be exacerbated in instances of high category involvement. Therefore, this research has important implications for policy makers and marketers in their quest to educate consumers and influence their behaviors. Moreover, a qualitative assessment of belief perseverance is a step forward for more constructive communication between policy makers, marketers, and customers about how to mitigate the enactment of incorrect beliefs.

How can managers convince consumers to disconfirm preconceived notions about certain products? How can they use their promotions to strengthen the argument against misguided consumption and get consumers to question their behaviors?

To the researcher's knowledge, consider-the-opposite strategy is the only available technique that has been shown to successfully remedy the confirmation bias and instances of belief perseverance (Ross, Lepper and Hubbard 1975; Anderson 1982; Lord, Lepper and Preston 1984). This technique simply involves encouraging customers to reflect on reasons that their subjective beliefs might be incorrect and why the opposing view may instead be true. The current study will utilize open-ended statements that aim to reveal why beliefs persist in the face of disconfirming evidence. This investigation could potentially discover new corrective strategies for overcoming belief perseverance. Moreover, the current study will provide marketers with alternative de-biasing strategy(s) for "considering the opposite."

### **Dissertation Organization**

Whereas Chapter One opens the subject of confirmation bias and the phenomenon of belief perseverance, Chapter Two links these phenomena to the relevant theoretical framework(s). Moreover, an overview of research on cognitive dissonance and belief

disconfirmation is provided along with a research model and subsequent hypotheses. Chapter Three outlines the research methodology as well as measurement instruments used for testing the research hypotheses. In Chapter Four, the study results are reported and analyzed. Lastly, Chapter Five offers a discussion of findings, contributions of the dissertation, study limitations and avenues for future research.

## **CHAPTER TWO**

### **DEFINITIONS, LITERATURE REVIEW, AND THEORETICAL FRAMEWORK**

#### **Theories of Cognitive Consistency**

Where does belief perseverance fit in the grand scheme of theory? Cognitive consistency theories are a cluster of principles of social psychology that attempt to uncover and explain human cognition (Simon and Holyoak 2002). Theories of cognitive consistency suggest that people are inherently inclined to maintain equilibrium between their beliefs and observable behaviors and seek to resolve any inconsistencies (Abelson et al. 1968). Cognitive consistency theories include balance theory (Heider 1958), congruity theory (Osgood and Tannenbaum 1955), symmetry theory (Newcomb 1953), affective-cognitive consistency (Rosenberg 1956), and cognitive dissonance theory (Festinger 1957). There are various ways of referring to cognitive inconsistencies depending on the theory evoked (e.g. cognitive imbalance, incongruence, asymmetry, inconsistency, dissonance). A major assumption in such theories is that people are motivated to seek harmonious attitudes, thoughts, beliefs, values, behaviors, and feelings.

Theories of cognitive consistency share the same Gestaltian origins. Gestalt psychology or gestaltism is a school of thought that stresses the importance of individual perceptions and maintains that the mind exists independently with a reality of its own.

According to Gestalt psychology, people have a natural tendency to perceive the environment in ways that are simple and coherent (Köhler 1929).

Balance theory (Heider 1958) explains how a person develops his/her relationships with other people and his/her environment (triadic format). Assuming that people see a set of cognitive elements as being a system, the theory suggests that people will have a preference to maintain a balanced state among these elements. Consequently, when a person perceives an imbalance, he/she will be motivated to restore that balance.

Due to its rigid triadic structure, balance theory is not capable of describing the beliefs leading to one's attitude toward an object. More specifically, the theory is incapable of explaining the variability of belief strength or message content. According to Benoit and Benoit (2008), the theory's underlying components are more informative and less explanatory. Thus, balance theory appears to have many limitations in prediction and explanation.

Congruity theory (Osgood and Tannenbaum 1955) predicts that when a change occurs, it is always toward greater congruity with dominant frames of reference. The theory is deemed a special case of balance theory since it specifically focuses on attitudes a person holds toward sources of information and the objects of the source's assertions. Congruity theory is perhaps the most limited consistency theory since it only relates to attitude change (Shaw and Costanzo 1970). Hence, like balance theory, this particular theory of cognitive consistency does not provide a detailed account of the belief system, which is a fundamental notion in this research endeavor.

Symmetry theory (Newcomb 1953) suggests that people attempt to influence each another to achieve a state of equilibrium. The term 'symmetry' is used to distinguish the

theory from balance theory. Symmetry theory may be classified as a theory of interpersonal attraction that deals with communication among people. Thus, symmetry theory is an inappropriate alternative for explaining consumers' cognitive and behavioral responses to disconfirming evidence.

Affective-cognitive consistency theory (Rosenberg 1956) explores the relationship between beliefs and attitudes and maintains that people need to have coherence or stability between their cognitions and their attitudes toward certain objects or situations. The theory predicts that persuasive efforts that change the cognitive component of attitude will lead to a change in overall attitudes toward an object. According to affective-cognitive consistency theory, people who have a high consistency between the affective and cognitive components of their attitudes will exhibit a more articulate and more stable disposition. On the other hand, people who have a low consistency between the two attitudinal components will have less articulate and less stable dispositions (Rosenberg 1968).

Affective-cognitive consistency theory is typically noted in studies of attitude polarization (e.g. Chaiken and Yates 1985). As will be argued shortly, attitude polarization, as well as belief perseverance and illusory correlation, has links to confirmation bias and is rooted in the theory of cognitive dissonance. Hence, dissonance theory is conceived to be a more extensive, robust choice of cognitive consistency theory for this study.

## Cognitive Dissonance

Of the various cognitive consistency theories, cognitive dissonance appears a dominant theory since it is broad and deals with behavior in general, both social and nonsocial (See Figure 2.1). First explored in detail by the social psychologist Leon Festinger (1957), the theory of cognitive dissonance is a theory of human motivation asserting that it is psychologically uncomfortable to hold contradictory cognitions. The theory suggests that people have an inner drive to hold all of their attitudes and their beliefs in harmony and to avoid disharmony or dissonance.

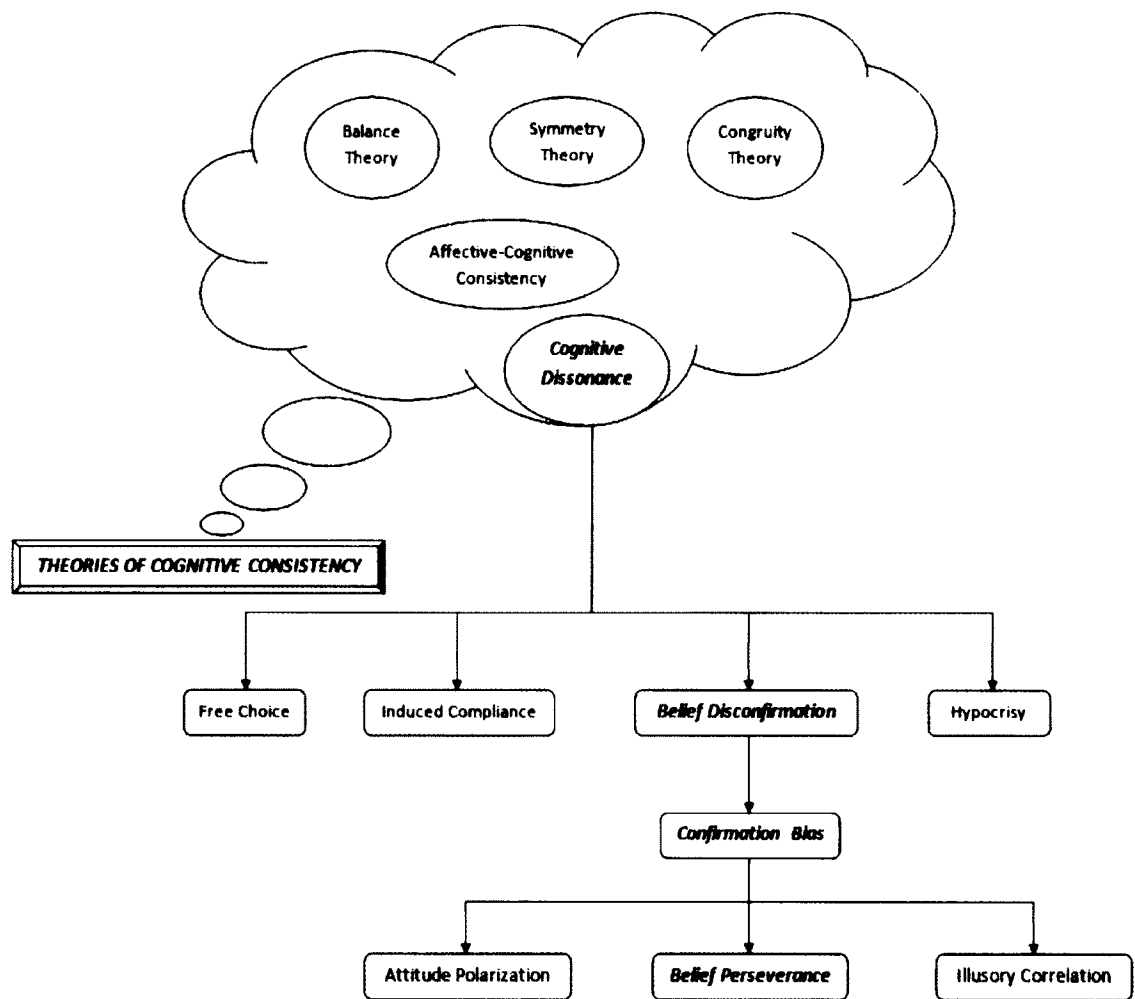


Figure 2.1 Theory Hierarchy of Belief Perseverance

Therefore, dissonance, being unpleasant, motivates a person to change his cognition, attitude, or behavior. Festinger proposed that cognitive inconsistency is the underlying psychological motivation that is responsible for the various persuasion effects of cognitive dissonance. Put differently, cognitive inconsistency evokes motivation to reduce inconsistency. Consequently, cognitive dissonance theory was heavily criticized for being a theory of inconsistency (Singer 1966). Nevertheless, cognitive dissonance theory has been and continues to be the most extensive of the cognitive consistency theories and highly regarded in consumer behavior and theories of social psychology (Shaw and Costanzo 1970).

Hunt (1970) provides a useful summary of dissonance theory along with the definition and descriptions of cognitions (cited in p. 46):

1. Cognitions are the bits of knowledge one has about himself, about his behavior, and about his surroundings.
2. Two cognitions are in a *dissonant* state if, considering these two alone, the obverse of one cognition would follow from the other.
3. Two cognitions are *consonant* if one cognition does follow from the other.
4. Two cognitions are *irrelevant* if one cognition implies nothing at all concerning the other.

Cognitive responses are defined as “any thoughts that arise during the process of elaboration when people relate message material to other message content or to their preexisting knowledge and views stored in memory” (Meyers-Levy and Malaviya 1999, 47). Based on the definition and descriptions of cognitions, Festinger (1957) describes dissonance as a conflict situation between the knowledge of reality that individuals



perceive about themselves, their behaviors, and their surroundings. Conversely, consonance is described as a no-conflict, harmonious state. Thus, cognitive dissonance theory is categorized into three parts (Festinger 1957): First, dissonance occurs when a person's attitudes contradict other attitudes or behaviors. Second, dissonance is an aversive state; therefore, a person feels pressure to reduce the dissonance and prevent future increases of dissonance. And third, a person tries to reduce this aversive state through changing behavior and cognition, and avoiding the introduction of new information or opinions that could produce dissonance.

Cognitive dissonance arises in three primary ways (Loudon and Della Bitta 1993):

1. Any logical inconsistency can create a sense of dissonance.
2. Dissonance occurs when people experience an inconsistency either between their attitude versus their behavior or between two types of their behavior.
3. Dissonance can take place when strongly held beliefs or expectations are disconfirmed.

Interestingly, Hasan and Nasreen (2002) suggest that cognitive dissonance is not automatic in each of these modes of dissonance provocation. For dissonance to occur, a consumer must perceive the inconsistency.

In consumer behavior, the dominant view is that dissonance occurs once a decision has been made. For example, before making a decision choice, consumers still have the option of adjusting their purchase behavior to match their given attitude toward a product, brand, or service. However, a commitment is established between consumers and sellers when consumers have made their final decision. Thus, the restriction of having made a buyer-seller commitment does not allow consumers to adjust their

behavior further and forces them to stick to their decision. The described situation may eventually bring about feelings of dissonance for consumers, especially when they are not pleased with their decision choice after purchase (e.g. buyer's remorse).

To summarize, dissonance and consonance are relations among a person's cognitions that can be among opinions, beliefs, knowledge of one's environment, and knowledge of one's own actions and feelings. Consonance exists when two opinions, beliefs, or items of knowledge are consistent and fit with each other. On the other hand, dissonance is invoked when two opinions, beliefs, or items of knowledge are inconsistent or do not fit together. Festinger (1957, 1964) mentioned three ways (not mutually exclusive) that a person might try to cope with instances of cognitive dissonance:

1. Changing consonant factors (e.g. by changing one or more of the beliefs, opinions, or behaviors involved in the dissonance).
2. Adding consonant factors (e.g. by obtaining new information or acquiring new beliefs that will increase the existing consonance to help reduce the total dissonance).
3. Lowering the importance of dissonant factors (e.g. by reducing and perhaps forgetting the importance of dissonant cognitions).

### **Self as Information Processing Filter**

Aronson (1968) modified dissonance theory by emphasizing the role of the self. He declared that "[if] dissonance exists, then it is the result of cognitions inconsistent with the self-concept" (1968, 23). Robins, Tracy, and Trzesniewski (2008) proposed that the two aspects of the self, i.e. self-awareness and self-representation, are evolved mechanisms that serve four adaptive functions: self-regulation, information processing

filter, understanding others, and identity formation. They suggest that these four functions have helped people to survive, reproduce, and attain social status and acceptance in increasingly complex social environments. With regards to the self as an information-processing filter, it is virtually impossible for people to attend to and encode all of the information that is constantly bombarding them. Hence, the self attends to this problem by serving as a filter, or lens, through which people experience the world around them. People's self-representations consist of cognitive structures, or schemas, that organize and direct the processing of information. Therefore, Robins, Tracy, and Trzesniewski (2008) suggest that the self serves as a top-down information filter that is guided by four basic motives: accuracy, consistency, popularity (i.e., social status and acceptance), and enhancement. These basic motives are purported to influence which information the self attends to, encodes, retrieves, and acts upon. They describe the motivational orientations in terms of four metaphors: the scientist, the politician, the egotist, and the consistency seeker.

The scientist metaphor illustrates people's desire to obtain accurate information about themselves and the world, i.e. striving for "truth". The politician metaphor suggests that people try to present themselves in ways that make the best impressions on others to enhance their own social status and acceptance. The egotist metaphor entails that people narcissistically distort information to enhance their own self-worth. The consistency seeker metaphor, according to Swann (1997), describes people as striving to see themselves in a consistent manner by confirming their preexisting self-views regardless of reality.

Robins, Tracy, and Trzesniewski (2008) contend that there is sufficient evidence to suggest that a person may actively seek out and create contexts in which his/her self-view will be confirmed even when these views are inaccurate or negative. One can clearly see how the functions of the self in general and the motivations for the self as an information processing filter in particular can be used to explain the reality of confirmation bias and incidences of belief perseverance. Hence, consistency seeking may cause people to make serious information processing errors, but this blunder is purported to be a useful and efficient heuristic for people living in increasingly complex social environments.

What does all of that mean for the interaction between buyer and seller? In the contemporary marketplace, consumers are faced with a plethora of information on the seemingly endless choices of available products and services. Faced with such huge display choices, consumers could forgo a deeper cognitive reasoning to save time and, instead, rely more on habits or heuristics to make a quick, thoughtless choice. This presents a major problem when marketers need to communicate new information containing substantial evidence that would change consumer belief-expectancies.

### **Research Paradigms of Cognitive Dissonance**

Harmon-Jones (2002) discusses four research paradigms that have been used to examine cognitive dissonance processes: Free Choice (Brehm 1956), Induced Compliance (Festinger and Carlsmith, 1959), Belief Disconfirmation (Festinger, Riecken,

and Schachter, 1956), and Hypocrisy (Aronson, Fried, and Stone, 1991). See Figure 2.1 for a depiction of these paradigms of dissonance research in relation to confirmation bias and belief perseverance.

### *Free Choice Paradigm*

People make all kind of decisions on a daily basis. Festinger (1957) asserted that decision-making almost always provokes dissonance. Once a person makes a decision to choose one alternative over another, he/she will have to cope with the cognitive elements concerning the attractive attributes of the rejected alternatives.

The free choice paradigm (Brehm 1956) focuses on this notion that dissonance is provoked in decision-making and that harder (easier) decisions stimulate more (less) dissonance. This affective-motivational state of dissonance is lessened by viewing the selected (not selected) alternative or choice as more (less) desirable, i.e. the “spreading of the alternatives.”

Changing one’s behavior is one of the ways to reduce dissonance that can occur from making a decision (Festinger, 1964). Consequently, behavior change can often be very difficult to do. For that reason, people might employ various mental maneuvers instead of changing their behavior. In the free choice paradigm, the “spreading of the alternatives” refers to one of these common mental maneuvers to reduce dissonance. Thus, people reduce their dissonance from decision making by increasing the attractiveness of a chosen alternative and decreasing the attractiveness of a rejected alternative.

One of the pioneering studies to examine the relationship between dissonance and decision-making was conducted by Brehm (1956). Female subjects were informed that

they would be helping out in a study funded by several manufacturers. They were also informed that they would receive one of the products at the end of the experiment as compensation. Eight household products, including an automatic coffee maker, an electric sandwich grill, an automatic toaster, and a portable radio, were rated on their desirability. The products ranged in price from \$15 to \$30.

Subjects in the control group were given one of the products. Hence, these subjects did not have any dissonance to reduce since they did not have to make a decision. Subjects in the low-dissonance group were asked to choose between a desirable product and a less desirable one that was rated three points lower on an 8-point Likert scale. In the high-dissonance treatment group, subjects were asked to choose between a highly desirable product and one rated just a point lower on the same scale. The subjects were asked to rate the products once more after reading reports about the household products.

Behm (1956) found that subjects in the high-dissonance group were significantly more likely to increase the attractiveness of the chosen alternative and to decrease the attractiveness of the not chosen alternative than subjects in the other two treatment groups (low-dissonance and control). Thus, Behm (1956) provided support for “spreading of the alternatives” by subjects in the high-dissonance condition.

As discussed previously, decision-making involves the rejection of alternatives. Thus, cognitive dissonance theory predicts that consumer decision-making will sometimes lead to post-purchase dissonance. Two factors determine the possibility and the extent of the dissonance experienced from making a decision: the importance of the decision and the relative attractiveness of the rejected alternative (Oshikawa 1969). More

specifically, consumer decisions of greater (lesser) importance and more (less) attractive rejected alternatives will lead to greater (lesser) dissonance. According to Oshikawa (1969), a variation of dissonance theory suggests that consumers who consider a greater (lesser) number of alternatives and/or alternatives with more (less) equal positive and negative attributes before purchase will experience greater (lesser) post-purchase dissonance.

### *Induced Compliance Paradigm*

The induced, or forced, compliance paradigm (Festinger and Carlsmith, 1959) assumes that dissonance occurs when an individual does or says something that contradicts his or her prior belief or attitude. Thus, people sometimes behave in a manner that is inconsistent with their beliefs. Why would a person behave this way? He/she may be induced to do so via external justifications such as certain promises of reward or threats of punishment. Greater dissonance is the result of a person's contradictory actions when these external justifications are few and unimportant (and vice-versa).

For example, people sometimes find themselves in a situation where they are publicly forced to do something that they privately do not want to do. When that happens, dissonance is created between a person's cognition and a person's behavior, i.e. "I did not want to do this" versus "I did it." Since the behavior is irreversible, dissonance may be reduced by re-evaluating attitudes toward the behavior.

In an interesting experiment, Festinger and Carlsmith (1959) investigated if cognitive dissonance could be created through induced compliance behavior by forcing people to perform a dull task. To create a series of very boring tasks, Festinger and Carlsmith (1959) requested male subjects to put pegs in a peg board and remove them for

30 minutes. Then, the subjects were asked to turn pegs clockwise for another 30 minutes. Needless to say, subjects' attitudes toward these tasks were extremely negative. Afterward, the subjects were paid either \$1 or \$20 to tell a waiting participant that the boring tasks were really interesting, i.e. to tell a lie. The control group was not paid or asked to lie. Virtually all of the subjects told the lie that the boring experiment was enjoyable and fun. Lastly, subjects were asked to rate the dull tasks on enjoyment to reveal how they coped with their dissonance.

Festinger and Carlsmith (1959) predicted that subjects would suffer dissonance due to the contradiction between their negative attitudes of the boring task and their actions (lying). The experimenters found that subjects in the control group and the \$20 dollar group rated the tasks as boring. On the other hand, subjects in the \$1 group rated the dull tasks as significantly more interesting and enjoyable.

Results from Festinger and Carlsmith's (1959) study revealed that subjects who received \$1 to lie resolved the dissonance created by their initial negative attitudes toward the boring task and their actions by rating the experiment as pleasant. Since the high monetary reward justified their actions of dishonesty, subjects who received \$20 did not experience as much dissonance. Hence, Festinger and Carlsmith (1959) suggested that, due to the lack of a strong external reward, subjects in the \$1 group were forced to change their attitudes to relieve the cognitive tension caused by the conflict between their attitudes and behaviors.



In a true market setting, a consumer is not forced to make a purchase. Consumers will try their best not to behave in ways which they know will later arouse dissonance. Hence, the induced compliance paradigm of research is not likely to cause consumers to experience post-purchase dissonance (Oshikawa, 1969).

### *Belief Disconfirmation Paradigm*

The belief disconfirmation paradigm (Festinger, Riecken, and Schachter, 1956) proposes that dissonance arises when people are exposed to information that is inconsistent with their beliefs. Dissonance can be reduced by changing previously held beliefs. For people who do not change their beliefs, the unresolved dissonance may lead to 1) misperceiving or misinterpreting information, 2) rejecting or refuting the information, 3) looking for support from those who agree with them or have the same belief, and 4) trying to persuade others to accept their belief.

Adams (1961) conducted an experiment to test two hypotheses concerning the reduction of cognitive dissonance by seeking information. The first hypothesis predicts that people exposed to disconfirming opinions are more likely to seek information compared to people exposed to compatible, confirming communication. The second hypothesis predicts that people exposed to disconfirming communication tend to seek confirming opinions from other sources. In the study by Adams (1961), opinions were gathered from mothers regarding the perceived importance of hereditary and environmental factors in raising children. The subjects were then exposed to substantial communication that advocated either a hereditary or an environmental point of view. The

results supported the first hypothesis but failed to support the second hypothesis. Thus, people exposed to belief disconfirmations may experience an increased level cognitive dissonance which in turn causes them to search for additional information.

Many factors come into play in determining whether disconfirming evidence will arouse consumer dissonance. According to Oshikawa (1969), the most important of these factors is the degree of commitment and ego-involvement. For example, when a consumer makes a perceived good choice *and* publicly commits to that choice, he or she will experience even greater dissonance when exposed to disconfirming information.

Some research suggests that dissonance is unlikely to arise when the degree of public ego-involvement is low and when disconfirming information is not salient (Cohen, Brehm, and Latane 1959; Rosen 1961). Cohen, Brehm, and Latané (1959) argued that making a public commitment leads to ego-involvement. Consequently, this ego-involvement increases the importance of the consonant cognitive elements on which people base their choices, making them even more committed. Hence, making public commitments can increase the magnitude of dissonance by also increasing the importance of peoples' dissonant cognitions.

Rosen (1961) examined the effect of cognitive dissonance on opinion-seeking behavior and suggested that people tend to seek the opinions of others regardless of their own opinions. Results revealed that roughly two-thirds of the subjects who were asked to make private decisions (without announcing publicly) sought dissonance-producing information regarding their decisions. The remaining one-third of the subjects sought dissonance-reducing information. The behavior of the latter group coincides more with

predictions that would be made by the confirmation bias. In addition, Rosen suggested that the tendency to reduce cognitive dissonance relates to the tendency to avoid risks.

### *Hypocrisy Paradigm*

In the hypocrisy research paradigm (Aronson, Fried, and Stone, 1991), people are induced to make a public attitudinally consistent statement and are then reminded of all the times they did not “practice what they preach.” Dissonance is reduced either by acting in accordance to the statement or by changing their attitudes to be more consistent with past behavior. Fried (1998) suggested that the chosen option depends on whether the recent statement or past behavior was more resistant to change.

Aronson, Fried, and Stone (1991) conducted an experiment that asked sexually active young adults to develop a speech promoting the use of condoms from a set of facts. The speech was supposedly intended for AIDS prevention of high school students. The subjects were randomly assigned either to “preach” or “no preach” conditions. That is, they either delivered the speech in front of a television camera, or they silently rehearsed the speech without actually delivering it.

Subjects in the “high mindful” conditions were asked to fully described occasions in their past when they had unprotected sex. The other half of the subjects in the “low mindful” conditions simply preached or did not preach (silently rehearsed) without any reference to their own sexual behavior. Lastly, the subjects reported their level of condom use in the past as well as their level of intention to use condoms in the future.

Results from the experiment indicated that subjects in the hypocrisy condition (preach/high mindful) reported the highest levels of previous risk behavior, i.e. failure to use condoms in the past. Aronson, Fried, and Stone (1991) argued that their procedure to

induce hypocrisy had enabled subjects to overcome denial. This finding is interesting because it is contrary to predictions from dissonance theory. The young adults in the hypocrisy group should have felt the greatest dissonance-based pressure to under rate their risk behavior.

A ceiling effect was seen when subjects in all conditions reported strong intention to use condoms in the future. Aronson, Fried, and Stone (1991) called subjects three months after the experiment and asked them to report recent condom use. Even though many of the subjects could not be located, a considerable difference in the size of means was found. Consequently, the researchers argued that hypocrisy induction might be the most effective route to long-term changes in behavior.

Of the four research paradigms of cognitive dissonance discussed, the belief disconfirmation paradigm is epitomized by the confirmation bias. As seen in Figure 2.1, in addition to belief perseverance, confirmation bias is also used to explain attitude polarization and illusory correlation.

### **Attitude Polarization**

Attitude polarization is the phenomenon in which a difference of opinions among people becomes more extreme as separate parties consider evidence on a particular issue. Lord, Ross, and Lepper (1979) exposed subjects that supported or opposed capital punishment to two case studies that confirmed and disconfirmed their existing beliefs about how effective the death penalty is as a crime deterrence. The researchers found that subjects' decisions about whether to accept a study's findings at face value or to search for

flaws and consider alternative interpretations depended far more on whether the study's results coincided with their existing beliefs than on the particular procedure employed in the study.

### **Illusory Correlation**

Illusory correlation is the perception of a relationship between two variables which, in reality, does not exist (Peeters 1983). Hamilton and Rose (1980) conducted a series of three experiments to test the notion of illusory correlation in the context of stereotypes. Subjects were asked to read sets of sentences that contained pairs of trait adjectives to describe people of different occupations. For instance, a doctor is described using consistent trait adjectives such as "thoughtful" and "wealthy," while a stewardess is described in the same stereotypical manner using the words "attractive" and "comforting" as consistent trait adjectives.

In the first two experiments, the trait adjectives were either consistent with occupational stereotypes or not related to the stereotype. The researchers found that subjects overestimated information congruent with their stereotypic expectations even though the frequency of the consistent and unrelated trait adjectives was the same. In the third experiment, Hamilton and Rose (1980) conducted a similar design employing inconsistent (instead of consistent) and unrelated trait adjectives. Results revealed that subjects estimated that inconsistent trait adjectives occurred significantly less frequently than unrelated traits. Thus, subjects' assessments were once again biased toward maintaining their existing stereotype beliefs.

## **Consumer Dissonance**

Cognitive dissonance has been studied extensively across disciplines, particularly in the realm of post-purchase consumer behavior (Ehrlich et al. 1957; Bell 1967; Hunt 1970; Sweeney, Hausknecht, and Soutar 2000). Consumer dissonance, in particular, has become a focal point for marketing researchers. For example, marketing research has examined the interplay between dissonance and brand loyalty (Cohen and Houston 1972), cognitive effect of advertisements post-purchase (Engel 1963), and the impact on service quality perceptions (O'Neill and Palmer 2004). Thus, a review of some key marketing research findings on post-purchase dissonance is warranted.

Straits (1964) illustrates that dissonance can be provoked in consumers in two ways; post-decision and via cognitive intrusion. Consumers faced with making a choice among many alternatives often weigh the advantages and disadvantages of each. After making a decision, consumers may experience cognitive discomfort if disequilibrium exists between the chosen and rejected alternatives. For example, a consumer may prefer and buy a high-performance sports car, but still value the extra space that could have been afforded by a larger car. Thus, in this case, either choice carries opportunity costs that may evolve into dissonance (Straits 1964).

Similarly, cognitive intrusion may create dissonance for consumers. When consumers are exposed to new information that contradicts their current behavior, they may experience dissonance as a result. For example, anti-smoking campaigns aim to intrude on the psyche of smokers or potential smokers by presenting additional evidence of the harmful effects of tobacco products. The mental discomfort formed from the discrepant information is intended to discourage future consumption of tobacco products.

Bell (1967) examined consumers' feelings of dissonance (buyer's remorse) following the purchase of a new car. The researchers conducted personal interviews with new car buyers ranging from one to eight days after the car purchase. Contrary to previous studies, Bell's (1967) findings did not provide immediate support for an association between persuasibility and cognitive dissonance. However, once a control was set in place for the self-confidence of buyers, Bell (1967) found significant relationships between persuasibility and cognitive dissonance. That is, car buyers with high (low) self-confidence exhibited high (low) levels of dissonance if they were easily persuaded to buy a car. Moreover, car buyers who perceived that they received high quality of service experienced less cognitive dissonance. More specifically, buyers who were moderately persuaded received the worst service, and consequently, these buyers are the ones who experienced the most cognitive dissonance. Bell (1967) suggests that highly confident buyers generally prefer to make their own decisions, and dissonance may arise if they perceive coercion in the buying experience. Customers with low self-confidence may need to rely on salespeople to help them make decisions, and dissonance can arise afterward as a result.

In recent research by Sweeney, Hausknecht, and Soutar (2000), results indicate that cognitive dissonance contains both cognitive and psychological (or emotional) components. They define the cognitive aspect as "a person's recognition that beliefs are inconsistent with a decision after the purchase has been made" (2000, 374). The emotional aspect of cognitive dissonance is defined as "a person's psychological discomfort subsequent to the purchase decision" (2000, 375). Sweeney et al.'s (2000) cognitive dissonance after purchase scale contains three dimensions. One of the

dimensions is emotional, while the other two dimensions (wisdom of purchase and concern over deal) are cognitive. The authors describe wisdom of purchase as the consumer post-purchase recognition that he/she did not need the product or did not choose the right one. On the other hand, 'concern over deal' is the post-purchase perception that salespeople might have influenced the purchase decision in a way that is against the customer's own beliefs.

For the most part, previous (and subsequent) marketing research on cognitive dissonance has been limited to dissonance in post-purchase situations. However, dissonance for a consumer may also arise prior to making a decision. For example, consider a consumer that holds strong beliefs about a particular product (or service, brand, etc.) and has been continually buying the product based on this belief. Dissonance may occur if the consumer is exposed to disconfirming evidence regarding his/her product beliefs, particularly if this information originates from a credible source. How is a consumer to react?

A rational consumer may react to disconfirming evidence by changing his/her beliefs and buying behavior. However, according to Edward Chamberlin (1957, 60), "there is no reason to assume that human beings always act perfectly rationally; indeed, there is good reason not to assume it." Godden (2012), among others, contended that belief perseverance is an irrational behavior. Thus, it is extremely difficult to predict the reactions and the behaviors of an individual consumer. Due to confirmation bias, a consumer's beliefs may persist despite the exposure to new, considerable disconfirming information. What is the reason for this irrationality and perseverance of beliefs? Can belief perseverance still have an effect on the consumer's ensuing purchase behavior?



Individuals resist changing their attitudes because of an inherent commitment to that attitude. Pomerantz, Chaiken, and Tordesillas (1995) argue that people who are committed to a certain attitude feel confident that their attitude is correct and tend to vigorously defend their position. Hence, people with such firm stances are less likely to change their attitudes. Results from this study reveal that deeply held commitments or beliefs may trigger resistance mechanisms that reject contradicting evidence when presented. Similarly, it may be that consumers that are highly involved with a product/brand/service may discount the credibility of any information that contradicts their belief system.

### **Beliefs, Attitudes, and Knowledge**

The relationship between consumer thought and actions has captivated marketing researchers for decades. Accumulated evidence suggests that consumer beliefs and attitudes have a direct impact on purchase behaviors (Selnes and Grønhaug 1986; Feick, Park, and Mothersbaugh 1992). Beliefs represent consumers' perceived probability of existence regarding some distinguishable aspect of the world encompassing their subjective understanding of themselves and their environment (Fishbein and Ajzen 1975). The authors propose that reasoned action is driven by subjective judgments regarding the likelihood of a relationship between a belief and some other object, value, concept, or attribute. A person's salient beliefs are those that are activated from memory and considered important in a given context. Thus, attitudes are expressed as a function of a person's salient beliefs in a given situation.

According to Fishbein and Ajzen (1975), there are three different processes that underlie belief formation. These processes entail the formation of descriptive, inferential,

and informational beliefs. A descriptive belief is described as a perceived relationship between the object of a belief and some object (O and X, respectively) that is established via direct observation. An inferential belief is described as a link between O and X that is established via a process of inference from another belief about O. Lastly, an information belief is described as a link between O and X that develops via pertinent information that may be accepted from an outside source (Fishbein and Ajzen 1975).

The summary of associations can help illustrate the theory of reasoned action in a simple manner: Beliefs  $\Rightarrow$  Attitudes  $\Rightarrow$  Intentions  $\Rightarrow$  Behavior. For example, think about the statement: “we intend to help people we like.” If we believe that someone is a good person, then we will have a favorable attitude toward that person. As a result, we will have greater intentions to help that person should the need arise. Finally, the greater our intentions are to help, the more likely we are to actually help that person. Not surprisingly, typical marketing studies based on the theory of reasoned action focus mainly on consumer beliefs regarding product attributes and subsequent consumer attitudes toward brands and intentions to buy.

The theory of planned behavior (Ajzen 1988) suggests that the combination of three factors, i.e. attitude toward the behavior, subjective norm, and perceived behavioral control, lead to the formation of a behavioral intention, and this intention is presumed to be a direct antecedent of behavior. The theory of planned behavior differs from the theory of reasoned action in that it includes perceived behavioral control as an additional determinant of intentions and behavior. Thus, the theory of reasoned action (predecessor theory) is a reduced version of the theory of planned behavior and is appropriate when perceived behavioral control is inappropriate to the context at hand.

Both of these theories, i.e. the theory of reasoned action and the theory of planned behavior, are rooted in the expectancy-value model. This model makes three fundamental predictions (Fishbein and Ajzen 1975). Firstly, people react to new information about something by developing a belief about that something. Secondly, people assign certain values to each attribute that their belief is based on. Thirdly, people form or modify their belief-expectancies based on their subjective assessment of value. Observe that the expectancy-value model assumes that existing beliefs can and most likely will be modified by new information. As mentioned previously, this is not the same prediction that can be made in the case of belief perseverance. Due to the confirmation bias, adamant consumers will more than likely dismiss novel information that is contrary to their beliefs.

### **Subjective vs. Objective Knowledge**

Brucks (1985) identifies three categories of consumer product class knowledge: subjective knowledge, objective knowledge, and prior experience. Subjective knowledge is the consumer's perception of how much he or she knows, i.e. self-rated or self-assessed knowledge. Objective knowledge is what a consumer actually knows. Finally, prior experience pertains to a consumer's previous purchasing or usage experience with the product.

According to Brucks (1985), the prior experience category is inconsistent with the information processing paradigm. The information processing paradigm maintains that only an experience that results in differences in memory can affect behavior. Behaviors are likely to vary from one consumer to the next since consumers can learn different things from similar experiences. Hence, Brucks (1985) argues that measures of subjective

and objective knowledge are more directly linked to behavior compared to measures of knowledge based on prior experience. Additionally, she declares that this is particularly true for product classes in which habit is not a major factor.

Various researchers have shown that a consumer's subjective knowledge and objective knowledge do not necessarily correlate in a perfect manner (Selnes and Grønhaug 1986; Klerck and Sweeney 2007). Consequently, measures of subjective and objective knowledge can have very different effects on information processing and subsequent purchase behavior. Thus, researchers have recommended that close attention should be given to the differences between each of these measures (Selnes and Grønhaug 1986; Klerck and Sweeney 2007). More specifically, the appropriate measure should be selected according to the focus of the research. For instance, Selnes and Grønhaug 1986 argue that subjective knowledge measures are preferable when concentrating on motivational aspects of product knowledge. On the other hand, objective knowledge measures, they argue, are more appropriate for studies that focus on ability differences of consumers.

Demographic variables can be influential factors in shaping a consumer's knowledge. For example, researchers have found that higher levels of education are positively related to higher levels of organic food knowledge (Ellen 1994; Gracia and De Magistris 2007). In addition, following an examination of the relationship between knowledge and pro-ecological behaviors, Ellen (1994) found that higher income and younger age are positively related to both subjective and objective knowledge.

Researchers have suggested that subjective knowledge, in comparison to objective knowledge, offers a stronger motivation for subsequent purchase behavior (Selnes and

Grønhaug 1986; Feick, Park, and Mothersbaugh 1992). For example, Chryssochoidis (2000) and Gracia and De Magistris (2007) found that consumers with higher levels of subjective knowledge of organic food have significantly greater intentions to buy organic food. Gracia and De Magistris (2007) argue that a consumer's knowledge is the only tool available to differentiate organic product attributes from conventional product attributes and to form positive attitudes toward the organic product category. Consumers with weak perceived self-competence in a particular product category will feel incapable of making a good choice. As a result, these consumers will probably shy away from that product category all together (Chryssochoidis 2000). Results in Thøgersen (2007) support this notion by revealing that consumer uncertainty has direct, negative effects on intentions to buy organic food and on actual purchasing of organic food.

To summarize, objective knowledge and subjective knowledge are terms used to differentiate between a consumer's actual knowledge and a consumer's assessment of his or her knowledge, respectively. Objective knowledge exists as accurately stored information, while subjective knowledge refers to self-beliefs about the consumer's own knowledge (Moorman et al. 2004). This dissertation focuses on the subjective beliefs of consumers. That is, the study will attempt to provoke consumers' subjective beliefs with disconfirming evidence in order to examine these potentially significant effects on purchase-related behavioral intentions of the consumers.

### **Persuasion Models and Inoculation Theory**

There are numerous models of persuasion known to marketing. Examples of common persuasion models include the Elaboration Likelihood Model (Petty, Cacioppo and Schumann 1983), the Heuristic-Systematic Model (Chaiken 1980), and the

Persuasion Knowledge Model (Friestad and Wright 1994). According to Meyers-Levy and Malaviya (1999), persuasion does not necessarily rest within information; rather, successful persuasion depends on the mental processes invoked by information. Hence, persuasion models have much to offer in examining belief change but have little to offer in regards to answering the “why” question in the case of belief perseverance. That is, persuasion models such as the aforementioned ELM, HSM, and PKM can provide explanations for instances of belief change but fail to explain why people do not modify their beliefs in the presence of disconfirming (and convincing) evidence.

Inoculation theory (McGuire 1961) is a theory that explains how to keep original beliefs consistent in the face of counterarguments. Hence, the theory is essentially opposite to persuasion. That is, unlike traditional persuasion models, inoculation theory does not focus on describing the processes that lead to persuasion. Instead, the theory focuses on explaining how people can build a resistance to persuasive influence. McGuire (1961) suggested that beliefs and attitudes that are commonly held and seldom attacked would be most vulnerable to attack, because people would be unprepared to defend them. He called these ubiquitously shared beliefs “cultural truisms” (Szabo and Pfau 2002).

According to Szabo and Pfau (2002), inoculation theory is founded on the notion of selective exposure. Therefore, the theory has a fundamental relation to cognitive confirmation bias and perhaps an insightful one as well. As mentioned previously, confirmation bias deals with biased search, interpretation, and memory. Selective exposure, like confirmation bias, assumes that people will be attracted to information that supports their beliefs/attitudes, and they will purposely avoid information that

disagrees with their beliefs/attitudes (Szabo and Pfau 2002). One can see how the two terms, i.e. confirmation bias and selective exposure, have sometimes been used interchangeably in research.

Inoculation theory assumes that counterarguments that challenge people's beliefs and attitudes will threaten them. Thus, the theory consists of two main components: threat and refutational preemption (Szabo and Pfau, 2002). The threat is what motivates a person to protect his or her beliefs and attitudes. Refutational preemption involves activating a person's argument against systematic belief attacks and strengthening (or inoculating, immunizing, etc.) his or her existing beliefs via expression.

Researchers have demonstrated the usefulness of inoculation techniques for the betterment of society (Pfau, Bockern and King 1992; Goldbold and Pfau 2000; Compton and Pfau 2004). Pfau, Bockern and Kang (1992) used inoculation to promote a resistance to start smoking in adolescent children. Godbold and Pfau (2000) showed that the inoculation approach can be used to lower the effects of peer pressure and early alcohol consumption. Compton and Pfau (2004) employed the inoculation technique to help protect college students against the dangers of credit card abuse.

Inoculation techniques of building immunity to persuasion can perhaps be applied in circumstances of belief disconfirmation to create a more favorable reception of beneficial counterarguments. For example, research shows that people drastically underestimate caloric content of food from so called "healthy" fast-food chains (e.g. Subway) compared to other restaurants (e.g. McDonald's) (Chandon and Wansink, 2007). In fact, consumers estimated that 1,000-calorie Subway meal contains over 20% less calories than a 1,000-calorie meal at McDonald's. Therefore, people are more likely

to feel more at ease to order additional side dishes and/or desserts at a “healthy” restaurant compared to one that is perceived as not so healthy. This phenomenon is commonly referred to as the “health halo.” Chandon and Wansink (2007) suggest that the harmful effect of health halos can be diminished by simply asking people to reflect on whether the opposite of such health claims are true. Perhaps this technique can be applied to help overcome instances of erroneous belief perseverance.

### **Assimilation-Contrast Theory**

Assimilation-contrast theorists assert that consumers’ susceptibility to belief change depends on their latitudes of acceptance and rejection to various stands on the issue (Hovland, Harvey, and Sherif 1957). For instance, consumers tend to assimilate or accept (contrast or reject) advertised prices based on correspondence with their internal price range. Olson and Dover (1976) argue that cognitive dissonance theory and assimilation contrast theory generally make the same predictions but tend to produce differing predictions for belief disconfirmations of great magnitude. Inductive reasoning suggests that for most consumer products, usage experience would not create the extreme disconfirmations required to produce a contrast effect. Olson and Dover (1976) concur that beliefs may change after a disconfirming experience and are likely to be triggered by dissonance reduction rather than processes of assimilation. Moreover, the result of contrast is that preexisting beliefs persist unchanged in the face of new evidence.

### **Product Involvement**

Product involvement is the general level of interest in a product, or the centrality of a product to the person’s ego-structure (Day 1970). In other words, product



involvement simply refers to the attributes linked to a certain product that are pertinent to a consumer. These attributes can include numerous aspects of the product including its importance, meanings, value, relationship strength, and level of psychological or affective connection (Howard and Sheth 1969; Laurent and Kapferer 1985). For example, a product may be more important to or provide more meaning and value for one consumer compared to another consumer. Thus, the strength of the relationship between a particular product and a consumer may vary significantly.

According to Laurent and Kapferer (1985), simple predictions can be made regarding the effects of involvement on consumer behavior. In general, consumers who are highly involved are expected to engage in various pre-purchase behaviors like active search, extensive evaluation of alternatives, and active information processing. Conversely, there should be much less anticipation for low involvement consumers to exhibit the same rigorous pre-purchase behavior.

Product involvement may produce different effects depending on consumer income levels. Gbadamosi (2009) conducted a focus group discussion and 30 in-depth interviews with low-income female consumers who engage in habitual purchasing. Based on qualitative findings, Gbadamosi (2009) purports that low involvement products yielded greater post consumption cognitive dissonance compared to high involvement products. Thus, purchases involving high-price products such as refrigerators and automobiles are not the only type of instances that can yield dissonance.

### **Perceived Value**

Perceived value is “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given” (Zeithaml 1988, 12).

Perceived value is so significant to customers that it has been coined “the fundamental basis for all marketing activity” (Holbrook 1994, 22). Research suggests that high value perception is one of the primary motivations for customer patronage. For example, results from Chang and Wildt (1994) and Gogoi (2013) support the notion that perceived value is a key factor influencing purchase intentions. Hence, it is no surprise that a focus on value creation has been strongly linked to subsequent profits and loyalty (Khalifa 2004).

Ever since the emergence of Vargo and Lusch’s (2008) service-dominant logic and its core notion of service as the fundamental basis of exchange, fewer researchers are considering value as it specifically relates to marketing theory and practice. According to a review by Babin and James (2010), value has been inauspiciously overlooked by other commonly researched outcomes such as satisfaction and loyalty. The key concept of value in marketing research is too critical to be ignored, particularly in this study.

Research suggests that perceived value can be considered both unidimensional and multi-faceted in its makeup (Sánchez-Fernández and Iniesta-Bonillo 2007). The unidimensional perspective views perceived value as a simple trade-off between benefits received and the sacrifices made to obtain such benefits (e.g. see Zeithaml’s definition). Other researchers argue that perceived value is a complex, multidimensional construct because, in addition to benefits and sacrifices, a variety of other notions such as perceived quality, price, affect, and social aspects are undeniably embedded in conceptualizations of value (Holbrook 1994; Babin, Darden and Griffin 1994; Sweeney and Soutar 2001). Sánchez-Fernández and Iniesta-Bonillo (2007) suggest that both perspectives of perceived value play a role in providing simplified (unidimensional) and complex (multi-

dimensional) understandings of the value concept. However, the researchers conclude that the nature of perceived value is complex and multidimensional.

Consumers' perceived value of an offering is likely to be affected when exposed to substantial evidence that would influence their beliefs regarding that offering. For example, a customer's perceived value of some product will probably be reinforced if the customer's product beliefs are confirmed. Conversely, if that same customer comes across substantial evidence that disconfirms his or her product beliefs, the customer's perceived value of that product will conceivably diminish.

### **Research Hypotheses and Model**

Cognitive dissonance theory predicts that a person exposed to disconfirming evidence tends to become more convinced that his or her original belief is correct and may exhibit a greater preference for the original belief (Oshikawa 1970). That is, invoking dissonance via exposure to discrepant evidence may not only lead to belief perseverance, but may lead to belief enhancement as well. Nonetheless, a person exposed to stronger disconfirming evidence will likely recognize greater conflict between that evidence and his or her beliefs. Lord, Ross and Lepper (1979) suggest that people who hold strong beliefs about something are apt to examine relevant evidence in a biased manner. Due to the confirmation bias, people with firmly held beliefs are likely to accept confirming evidence at face value, but they will subject any disconfirming evidence to highly critical evaluation.

Findings in Chang (2011) suggest that claim believability mediates the relationship between discomfort and subsequent brand attitudes. That is, discounting message believability may be a coping mechanism or a dissonance reduction technique

that alleviates psychological discomfort. These findings do not come as a surprise since previous research suggests that consumers who experience inconsistency between their beliefs and new evidence may be less affected if they discredit the evidence in the first place (Anderson, Lepper, and Ross 1980). If the evidence presented is perceived as being unbiased and credible (i.e. strong), then a higher level of belief disconfirmation and cognitive dissonance is expected. Consequently, these hypotheses emerge:

**Hypothesis 1:** Disconfirming evidence exposure will result in more instances of belief perseverance than belief change.

**Hypothesis 2:** Strong disconfirmations will result in more conflict between beliefs and evidence (and more cognitive dissonance) than weak disconfirmations.

According to Festinger's (1957) theory of cognitive dissonance, a person who senses conflicting thoughts will experience discomfort. Furthermore, research has shown that messages of high involvement essentially have greater personal relevance and result in greater consequences than messages of low involvement (Petty and Cacioppo 1979; Petty, Cacioppo and Schumann 1983). Thus, evidence containing salient information on a product will elicit a more personal connection for a person who is highly involved. Moreover, a highly involved person is expected to engage in more active information processing compared to a person who is not as involved (Laurent and Kapferer 1985). Therefore, when people are involved with a particular product, they will likely experience more intense feelings of dissonance as a result of their conflicting thoughts. People who are less involved with a product are not expected to be as concerned.

**Hypothesis 3:** Belief disconfirmation is positively related to consumer dissonance.

**Hypothesis 4:** Product involvement moderates the relationship between belief disconfirmation and dissonance, such that the relationship will be stronger for subjects with high product involvement than subjects with low product involvement.

People who experience dissonance due to belief disconfirmations are expected to show less enthusiasm in their subsequent purchase-related behaviors. If disconfirming a consumer's subjective beliefs regarding a product of interest generates sufficient dissonance, then this dissonance will ultimately affect the consumer's intention to buy that product in the future. Moreover, it is perhaps even less likely that the dissonant consumer will be willing to pay more for a premium product involved in the belief disconfirmation.

Research suggests that the intention to express word-of-mouth is related to consumer perceptions of value and quality (Hartline and Jones 1996). Consequently, higher perceptions of value and quality increase the likelihood of expressing positive word-of-mouth. Hartline and Jones (1996) found that of the two correlates, value is more influential. Certain attributes of a product can be central to the overall perceived value of the product. People who have had their beliefs pertaining to these key attributes of the products they buy disconfirmed are expected to engage less in positive word-of-mouth compared to people who have had their beliefs confirmed.

**Hypothesis 5:** Consumer dissonance is negatively related to perceived value.

**Hypothesis 6:** Perceived value is positively related to a) purchase intention and b) word of mouth.

Hypotheses 1 and 2 (RQ1) will be tested via analysis of variance (ANOVA). To test Hypotheses 3 through 6 (RQ2), the model of effects following evidence exposure (seen in Figure 2.2) will be examined using structural equation modeling and hierarchical multiple linear regression. A qualitative instrument will be employed to investigate RQ3. Details regarding the research design overview and the measurement instruments utilized are discussed next in Chapter Three.

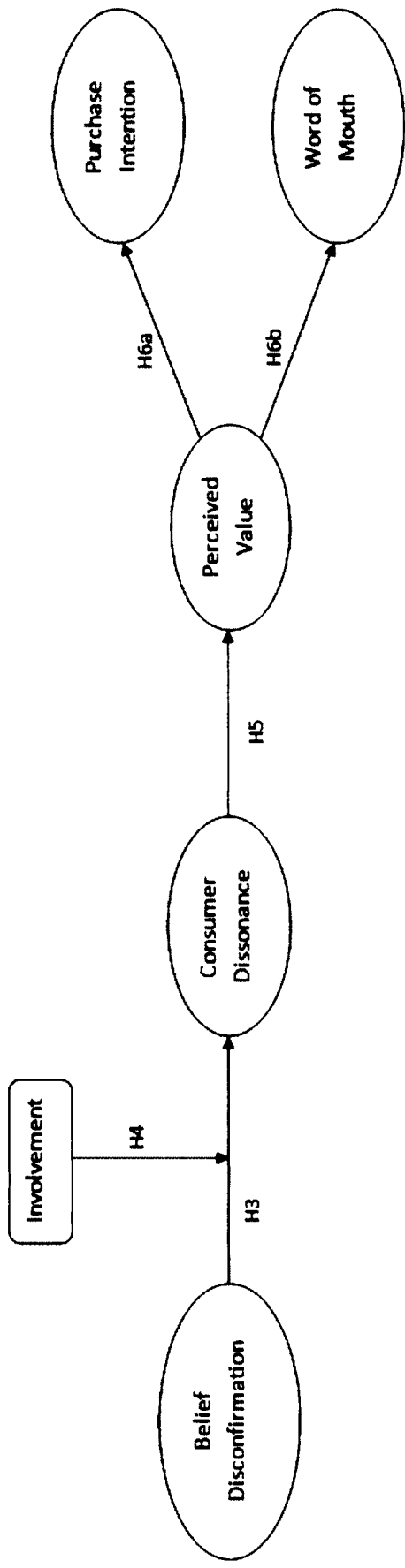


Figure 2.2 Hypothesized Model

## **CHAPTER THREE**

### **RESEARCH METHOD**

#### **Research Design Overview**

The research assesses whether robust, disconfirming evidence influences consumer beliefs regarding the perceived benefits of organic food consumption. The investigation attempts to induce a state of dissonance via belief disconfirmation and also evaluates salient marketing outcomes including perceived value, purchase intention, and word-of-mouth. The last phase of the research consists of a qualitative investigation which attempts to discover possible reasons why consumers might persist in their inaccurate beliefs despite being exposed to substantial disconfirming evidence.

The research employs a two (type of evidence: confirming vs. disconfirming) x two (evidence credibility: high vs. low) x two (number of informational elements / reasons: one vs. three) between subjects experimental design. A survey instrument is created using established scales in marketing and psychology literature (see Appendix B for all employed measurement instruments). Data is collected from both current and former students at Louisiana Tech University.

The study utilizes a two-step analytical approach (Anderson and Gerbing 1988). An overall measurement model is developed to examine the reliability and the validity of the constructs of interest using confirmatory factor analysis (CFA). Hypotheses 1 is tested through the assessment of qualitative responses.



Hypothesis 2 is tested via ANOVA. Structural equations modeling is then be employed to test the hypothesized model relationships (H3-H6) in AMOS 20. A test of moderation is conducted using hierarchical multiple linear regression analysis.

Next, a qualitative assessment will examine consumers' open-ended statements containing explanations of belief perseverance (as well as instances of belief change). It is anticipated that the content analysis should help identify recurring themes about consumer adamancy and thus offer important insights. Moreover, a qualitative evaluation will conceivably provide a basis for a future scale development regarding the proclivity to belief perseverance.

Studies that involve multiple measurements might increase the potential for demand characteristics. According to Sawyer (1975), using repeated measures of belief or attitude change is especially prone to demand bias. To determine the biasing potential of such demand bias, the subjects are asked for their opinion of the study's purpose at the end of the survey instrument.

### **Context of Study and Pre-test Context**

The research uses organic food as a study context. A report by Demeritt (2002) suggests that one main reason for American consumers not buying organic food is lack of knowledge and awareness. More specifically, almost 60% of the respondents stated that they have never considered buying organic products because they did not know about them. Since the early 2000s, and with the continuously growing consumer interest and popularity of the organic food sector, this percentage of American consumers who have never purchased organic foods has decreased substantially. To highlight one of the key

statistics reported by the Organic Trade Association (OTA) in 2014, it is estimated that over 80% percent of American families purchase organic food, at least sometimes.

The decision to choose organic food as a context for this study is not arbitrary. In addition to the overwhelmingly optimistic organic food sector growth statistics cited previously, researchers have suggested that a substantial degree of ego-involvement with a product may be necessary for disconfirmation effects to be clearly indicated (Cohen and Goldberg 1970; Anderson 1973). Generally speaking, “green” consumers or people who buy “green” are thought to attach a great deal of involvement to their purchases. With this in mind, organic food is selected as popular class of products that is conceived to be relatively high in ego-involvement for many Americans.

After conducting in-depth interviews, Bauer, Heinrich and Schäfer (2013) ascertained that, for German consumers, the main reasons for buying organic food are that it is 1) more nutritious than non-organic food, 2) kinder to the environment, and 3) safer to consume because no chemicals are used in the farming process. Interestingly enough, the researchers also identified a fourth reason why German consumers buy organic food. That is, German consumers also perceive organic food as being tastier than non-organic food (Bauer, Heinrich and Schäfer 2013). However, it is important to note that these cited purchasing motives fell within the first four ranks, but the order of precedence differed among the interviewed consumers.

This research conducts a similar pre-test to Chang’s (2011) determination of an appropriate way to systemize the different levels of strength for green advertising claim in the context of organic. That is, a pre-test is mandatory to determine the different levels of perceived importance for the previously cited top three reasons why consumers buy

organic: safer, kinder to the environment, and healthier. Once this is done, confirming/disconfirming evidence is manipulated effectively into appropriate levels of evidence strength depending on the order of perceived importance revealed by the pre-test.

Evidence exposure consists of a two (type of evidence: confirming vs. disconfirming) x two (credibility: high vs. low) x two (number of reasons: one vs. three) between subjects experimental design. Thus, eight experimental groups result as shown in Figure 3.1.

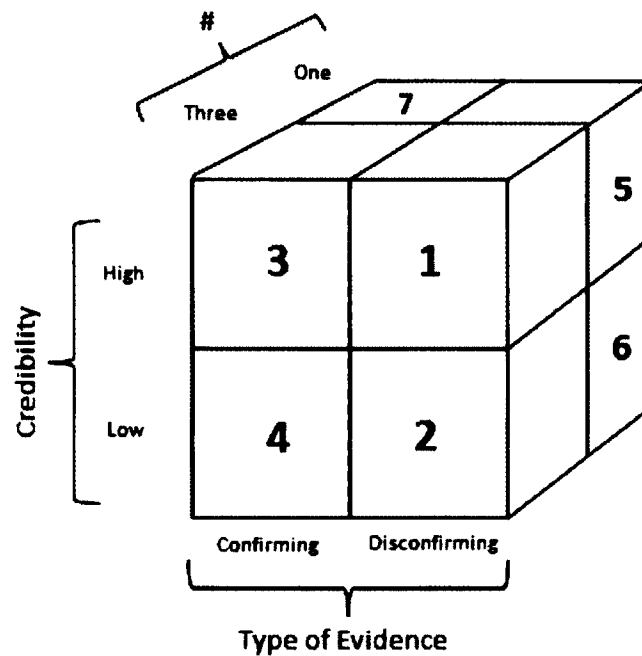


Figure 3.1 *Experimental Groups*

Subjects are exposed to substantial evidence which will either confirm or disconfirm their beliefs regarding the perceived benefits of organic food consumption. Confirming evidence consists of pro-organic information, while disconfirming evidence is expected to initiate dissonance for organic consumers. The strong-condition stimuli contain facts from a highly credible source (i.e. Stanford University) and include

references to all three reasons why consumers buy organic food. On the other hand, the weak-condition stimuli contain remarks from a much less credible source (i.e. Delta Community College) and include only the least significant motive for buying organic food. Hence, weak confirming and disconfirming evidence are ascertained pending the pre-test. The eight experimental stimuli or evidences are provided in Appendix A.

Three manipulation checks are in place to examine the viability of the experimental manipulations. Evidence believability is measured using 6-items employed by Chang (2011) and original to Beltramini (1982) and MacKenzie and Lutz (1989). An independent samples t-test facilitates the comparison of mean believability ratings between subjects in the high credibility and subjects in the low credibility experimental groups. A higher mean rating from subjects in high credibility conditions compared to that of subjects in the low credibility conditions signifies a successful credibility manipulation.

For the second manipulation check, subjects are asked to choose their primary motive for buying organic food. In addition, subjects are asked to rate three items on a seven-point Likert scale: the perceived level of importance attributed to nutrition, safety, and environmental friendliness in organic food consumption. A successful manipulation of evidence strength is indicated by obtaining mean responses that are comparable to results of the pre-test, and, at the very least, a similar rank order of key motives. Lastly, a third manipulation check asks participants whether the randomly depicted evidence contained pro-organic information or, instead, challenged the notion of organic superiority over conventionally-produced foods.

Hypothesis 1 is tested by assessing subjects' reactions to the evidence. Subjects are also asked if they are persuaded by the organic evidence presented in the survey. This assessment also sets the stage for the ensuing qualitative assessment. Hypothesis 2 is tested using ANOVA to assess of the differences between subjects' mean dissonance evaluations of the strong and the weak disconfirming evidence.

### **Measurement Instruments**

The first stage of research (following necessary pre-testing) assesses consumers' subjective beliefs regarding organic food. Perceived health benefits, perceived safety benefits, and perceived environmental benefits of organic food are measured using scales adapted from Bauer, Heinrich and Schäfer (2013). Each of these perceived organic attribute scales contains four items measured along a 7-point, Likert-type scale. Thus, subjective beliefs are measured using 12 items total. Next, subjects are exposed to one of the eight forms of organic food evidence.

The second stage of the research investigates evidence exposure effects on subjects' dissonance. The level of conflict between beliefs and the evidence provided is measured with a 3-item scale developed by Gürhan-Canli and Maheswaran (1998). The scale was originally used to measure the congruency (or lack of congruency) between a person's brand beliefs and new information that he or she is exposed to. Thus, the measurement instrument is easily adapted for use in the context of organic food.

Elliott and Devine (1994) argued that any assessment of dissonance should include psychological discomfort since this is how the process of dissonance arousal was originally conceptualized by Festinger (1957). Hence, the discomfort scale is proposed to be a reliable measure of cognitive dissonance (Elliot and Devine 1994). Subject's

potential discomfort due to any conflict between their subjective beliefs and the evidence is measured using a 3-item scale developed by Elliot and Devine (1994). Discomfort measures the extent to which subjects are experiencing a state of psychological tension and are troubled by it.

Product involvement is measured using a 5-item scale adapted from Beatty and Talpade (1994) that measures the subjects' level interest in some specified category of products. In this case, organic food will serve as the particular class of products.

A second measurement of subjects' perceived benefits of organic food is taken to determine if evidence exposure had any effect on their original beliefs. After seeing the evidence, subjects are asked to use three sliding scales to indicate how their beliefs about organic food have changed compared to their beliefs prior to exposure to the factual information.

The effects of induced dissonance (and consonance) on three outcomes are examined following the second measurement of subjects' perceived beliefs regarding organic beliefs. Consumer perceived value is measured using a single dimension from the suggested 12-item short form of the original 19 items from Sweeney and Soutar's (2001) PERVAL scale (Walsh, Shiu and Hassan 2014). The scale consists of four value dimensions: quality, emotional, price, and social. Quality or functional value refers to the practical benefits of using a product. Emotional or affective value refers to psychological feelings that consumers derive from a product. Price value refers to product worth compared with the sacrifices made such as cost, time, or effort spent in obtaining the product. Social value refers to the social utility derived from the product like self-enhancement, prestige, and status.

Of these four value dimensions proposed by Sweeny and Soutar (2001), quality or functional value is the most harmonious and fitting given the context of this study. In general, consumers do not buy organic food for its price nor for its emotional or social purposes. Consumers typically buy organic food for its perceived functional purposes, such as the ones discussed previously (e.g. healthier, safer to consume, kinder to the environment, etc.).

Purchase intention measures the inclination of subjects to buy or at least try organic food in the future. The measurement instrument consists of four items adapted from Putrevu and Lord (1994). Word-of-mouth measures subjects' expressed likelihood of making positive comments about organic food. Positive word-of-mouth is assessed using a four-item scale adapted from Brügggen, Foubert, and Gremler (2011). Although the original items pertain to restaurant word-of-mouth, they are easily adapted for use in the study context of organic foods. Finally, willingness to pay a price premium measures the amount subjects are willing to pay for organic food over conventional food using a four-item scale adapted from Netemeyer et al. (2004).

## CHAPTER FOUR

### RESULTS AND ANALYSES

#### Sampling Procedure and Data Collection

Prior to the formal launch of data collection, a pilot test was conducted to ascertain a rank order of key motives for buying organic food. This was done to effectively manipulate the number of reason conditions with one informational element in the evidence to contain the least popular one of the three reasons. A short survey was administered to 79 undergraduate students in two junior level marketing courses at Louisiana Tech University. As seen in Figure 4.1, a slight majority of respondents (52%) suggest that their main reason for buying organic food lies in a relative is healthiness rationale. For the remaining two reasons, respondents showed a very slight preference toward the 'safer to consume' aspect over 'kinder to the environment.'

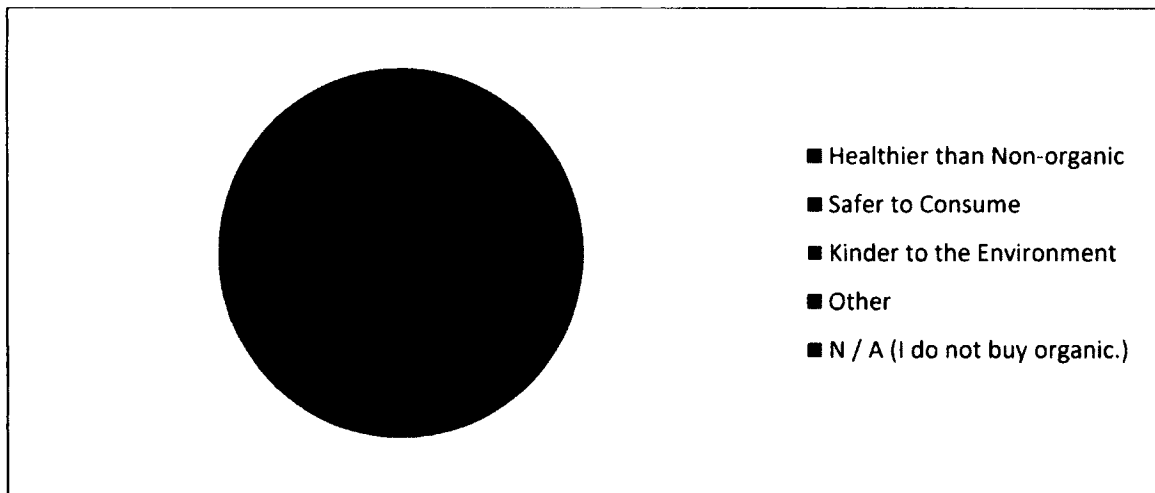


Figure 4.1 *Reasons for Buying Organic Food (Pre-test n = 79)*



Respondents who answered 'Other' or 'N/A' were given the option of disclosing additional information. Interestingly enough, one student declared that he or she believes that organically grown food tastes better than conventionally grown food. For most of the 30% non-buyers, the primary reason for not buying organic food is high pricing. This finding did not come as a surprise since all of the respondents were undergraduate students who may have had limited financial resources.

The final study sample consists of survey responses from undergraduate, graduate, and former students at Louisiana Tech University. Formal education is conceived to be an influential factor in shaping peoples' level of knowledge and familiarity with organic agriculture. Thus, college students (current and former) are considered to be relevant to this particular study setting which revolves around the organic food industry. A total of 392 observations are recorded. The estimated survey completion time is 10 to 15 minutes. For this reason, fifteen (15) speeder cases were dropped for being completed in less than four minutes as well as for 50 % or more missing data. An additional 36 cases were eliminated for failing to correctly respond to all three attention filters included in the survey. Consequently, a final total of 341 responses were analyzed.

The mean age of the subjects was 26. Nearly 62% of the subjects were in the age range of 18 to 25, and about 26% of the subjects fell into the 26 to 35 range. The male to female ratio of the subjects was almost evenly split (49.6% male to 50.4% female). Roughly 60% of the subjects were Caucasian, 19% were African American, 13% were Asian, and 3% were Hispanic / Latino. The remaining 5% of subjects listed themselves as 'Other.'

Subjects were randomly assigned to one of the eight experimental conditions [two (evidence type: confirming vs. disconfirming) x two (credibility: high vs. low) x two (number of reasons: one vs. three)]. Based on the pre-test study results, the four weaker evidence cells that only contain one argument were composed using environmental friendliness as the least important of the three reasons for buying organic food (see Appendix A for Experimental Stimuli).

### **Confirmatory Factor Analysis**

Latent measurement structure of all relevant constructs was tested using confirmatory factor analysis (CFA) in AMOS 20 (Anderson and Gerbing 1988). The overall CFA was conducted on the six multi-item constructs: belief disconfirmation, consumer dissonance, product involvement, perceived value, purchase intention, and word of mouth, all measured as described in Chapter Three and as illustrated in Appendix B. The initial CFA measurement model contained 22 measured items with a resulting chi-square fit statistic of 555.0 ( $p$ -value  $< 0.001$ ) and 194 degrees of freedom. The model comparative fit index (CFI) was 0.957, the root mean squared error of approximation (RMSEA) was 0.074, and the parsimony normed fit index (PNFI) was 0.786.

According to Hair et al. (2010), RMSEA values less than 0.07 with a CFI of 0.92 or higher given the overall CFA sample size ( $N > 250$ ) and number of variables ( $12 < m < 30$ ) demonstrate goodness-of-fit. The initial overall measurement model, therefore, exhibited slightly less than adequate goodness-of-fit given the resulting RMSEA of

0.074. Consequently, a more comprehensive inspection of standardized loading estimates and standardized covariance residuals was necessary to identify possible problematic issues in the measurement model.

Variables that have low loadings and high standardized residuals were eliminated from the initial overall CFA model. One reverse-coded variable measuring product involvement was dropped from the measurement model for having a low factor loading ( $\lambda = 0.25$ ). Three additional variables were removed from the model for exhibiting high standardized covariance residuals (greater than 2.5). Each of these suspect variables measured three separate constructs: product involvement, purchase intention, and positive word-of-mouth. The three variables correlated heavily with one another (described in more detail in the section on construct validity). Thus, a total of four items were purged from the original model (18% reduction) resulting in a final overall CFA measurement model comprised of 18 variables.

The final overall CFA measurement model demonstrated a notable improvement in goodness-of-fit compared to the initial CFA model fit. The final overall model produced a chi-square fit statistic  $\chi^2 = 231.7$  (p-value < 0.001) with 120 degrees of freedom. The model CFI was 0.983, the RMSEA was 0.052, and the PNFI was 0.757. Hence, the final overall measurement model exhibited sound goodness-of-fit (Table 4.1).

Table 4.1

*Confirmatory Factor Analysis and Comparison of Fit for Measurement Models*

Overall Measurement Model	$\chi^2$	df	p	CFI	RMSEA	PNFI
<u>Initial Model</u>	555.0	194	0.000	0.957	0.074	0.786
Belief Disconfirmation (3 items)						
Consumer Dissonance (3 items)						
Product Involvement (5 items)						
Perceived Value (3 items)						
Purchase Intention (4 items)						
Positive Word-of-Mouth (4 items)						
<u>Final Model</u>	231.7	120	0.000	0.983	0.052	0.757
Belief Disconfirmation <sup>1</sup> (3 items)						
Consumer Dissonance <sup>1</sup> (3 items)						
Product Involvement <sup>2</sup> (3 items)						
Perceived Value <sup>1</sup> (3 items)						
Purchase Intention <sup>3</sup> (3 items)						
Positive Word-of-Mouth <sup>3</sup> (3 items)						
<u>Notes:</u>						
<sup>1</sup> Construct items remain intact						
<sup>2</sup> Two items removed due to low factor loading and high standardized residual covariances						
<sup>3</sup> One item removed following residual analysis						

## Construct Validity

Goodness-of-fit alone does not substantiate an effective measurement theory. Construct validity refers to the extent to which a set of measured variables actually reflects the theoretical latent construct that the variables are intended to measure (Hair et al. 2010). Therefore, the overall CFA measurement model must display adequate fit and must also show evidence of construct validity.

Construct validity is comprised of four fundamental components: convergent validity, discriminant validity, nomological validity, and face validity (Hair et al. 2010). Convergent validity implies that the variable indicators of a particular construct should share a high proportion of variance in common. Hence, average variance extracted of each latent construct was calculated to assess convergence. Adequate convergence is supported by obtaining an average variance extracted of 0.5 or higher (Hair et al. 2010). All of the six constructs included in the overall measurement model had satisfactory extracted variances ranging from 0.74 to 0.90. Therefore, the variable indicators demonstrated sufficient convergence which in turn provided support for an accurate measurement theory.

Discriminant validity is the extent to which the constructs are truly distinct from one another (Hair et al. 2010). A rigorous test of discriminant validity entails comparing the average variance extracted for any two constructs with the squared correlation estimate between the two constructs. Good evidence of discriminant validity is shown by obtaining extracted variances that are higher than the squared correlation estimates (Hair et al. 2010). Variance extracted for each of the six constructs in the overall measurement model was higher than any of the squared correlation estimates between constructs. Thus,

each of the six measured constructs was considered unique since the constructs show signs of sound discriminant validity.

Nomological validity examines whether the correlations between constructs make sense according to the measurement theory (Hair et al. 2010). The construct correlations matrix ( $\Phi$ ) in Table 4.2 revealed that the valences of all significant correlations were logical and consistent with the underlying theory. Consequently, these results provided evidence for nomological validity.

Table 4.2

*Descriptive Statistics and Construct Correlations ( $\Phi$  Matrix)*

<b>Construct</b>	<b>Mean</b>	<b>SD</b>	<b>BD</b>	<b>CD</b>	<b>INV</b>	<b>PV</b>	<b>INT</b>	<b>WOM</b>
1. Belief Disconfirmation	3.33	1.53	(0.89)					
2. Consumer Dissonance	2.52	1.56	0.297*	(0.93)				
3. Product Involvement	3.63	1.67	-0.013	-0.111	(0.96)			
4. Perceived Value	4.82	1.22	-0.006	-0.227*	0.753*	(0.91)		
5. Purchase Intention	4.18	1.64	0.012	-0.208*	0.815*	0.649*	(0.95)	
6. Positive Word-of-Mouth	4.57	1.56	0.028	-0.211*	0.753*	0.762*	0.833*	(0.96)

*Notes:* Construct reliability coefficients ( $\alpha$ ) for multi-item scales in parentheses along the main diagonal. N = 341

\*p < 0.001

Face validity is the extent to which the content of variables is consistent with the definition of the measured construct and should be established prior to commencing tests of measurement theory (Hair et al. 2010). This being said, one of the four purchase intention scale items adapted from Putrevu and Lord (1994) was spotted to be more in accord with positive word-of-mouth during the overall CFA model assessment: ‘Suppose that a friend called you to get your advice in his/her grocery shopping trip. Would you recommend him/her to buy organic?’ Coincidentally, this item was one of the three that

was dropped from the initial overall CFA model following an analysis of standardized covariance residuals. All variables in the final overall CFA model exhibited good face validity (Table 4.3).

Table 4.3

*Standardized Factor Loadings*

	<b>BD</b>	<b>CD</b>	<b>INV</b>	<b>PV</b>	<b>INT</b>	<b>WOM</b>
BD1	0.85					
BD2	0.88					
BD3	0.85					
CD1		0.88				
CD2		0.95				
CD3		0.88				
INV2			0.96			
INV3			0.97			
INV5			0.91			
PV1				0.85		
PV2				0.93		
PV3				0.85		
INT1					0.95	
INT2					0.92	
INT3					0.92	
WOM1						0.95
WOM2						0.93
WOM3						0.94
Variance	0.74	0.82	0.90	0.77	0.86	0.89
Extracted	0.89	0.93	0.96	0.91	0.95	0.96
Construct						
Reliability						

**Manipulation Checks**

Manipulation checks were used for the type of evidence (confirming vs. disconfirming), the evidence credibility (high vs. low), and the number of arguments (one vs. three) experimental variables. Two separate items asked subjects to recall a) whether the evidence shown suggested that organic food is better than conventionally grown

(non-organic) food, and b) which research entity reported the factual evidence on organic food. Confirming conditions contained evidence suggesting organic food superiority, while disconfirming conditions consisted of evidence suggesting no added benefits to organic food consumption. Moreover, as mentioned in Chapter 3, Stanford University was cited as the source of evidence in high credibility conditions as opposed to Delta Community College in the low credibility conditions. Results shown in Table 4.4 support the notion that the majority subjects successfully recalled the depicted evidence.

Table 4.4

*Manipulation Recall*

<b>Evidence Type</b>	<b>N</b>	<b>Incorrect</b>	<b>Correct</b>	<b>% Correct</b>
Confirming	188	38	150	79.8
Disconfirming	153	45	108	70.6
High Credibility	173	13	160	92.5
Low Credibility	168	32	136	81.0

Evidence believability was measured using six-items on seven-point Likert scale that asked subjects how much they agree or disagree with evaluative terms regarding the content of the evidence such as ‘credible’, ‘believable’, and trustworthy.’ This scale assessment was not included in the CFA since it was not part of the model theorized. A composite reliability analysis conducted on the six scale items measuring evidence believability produced a Cronbach’s coefficient alpha ( $\alpha$ ) of 0.92. Thus, the evidence believability scale was considered to have very good reliability (Zikmund and Babin 2010).



An independent samples t-test was used to assess the mean differences in perceived evidence believability between subjects in the high and low credibility groups (Table 4.5). The difference in means yielded an insignificant Levene's test for equality of variances ( $F = 0.005$ ,  $p = 0.942$ ). Subjects in the high credibility groups revealed a mean believability rating of 5.2 compared to a mean rating of 4.9 by subjects in the low credibility groups ( $t = -2.61$ ,  $df = 339$ ,  $p = 0.01$ ). Thus, statistically speaking, the results were consistent with an effective manipulation of evidence credibility. Practically speaking, however, the effect size was small for the manipulation given that each of the obtained means rounded to 5. Perhaps the reason for this finding is that the evidence itself was not very surprising for most subjects. Consequently, the source of evidence may not have really mattered.

Table 4.5

*Means and Standard Deviations of Evidence Believability*

<b>Credibility</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SE</b>
High	173	5.20	1.04	0.08
Low	168	4.90	1.08	0.08

A subsequent investigation of the key motives for buying organic food was conducted to substantiate the rank order obtained from the pilot study. Bauer, Heinrich and Schäfer's (2013) 12-item scale was employed for assessing beliefs regarding perceived organic benefits ( $\alpha = 0.93$ ). As depicted in Table 4.6, health benefits had the highest mean rating (5.13) followed by environmental (4.95) and safety benefits (4.79). These results conflicted slightly with the rank order obtained in the pilot study.

Therefore, further inspection was warranted. (Note: Females reported slightly higher means compared to males for each of the three perceived benefits.)

Table 4.6

*Mean Ratings for Perceived Organic Benefits*

<b>Motives</b>	<b>Overall Mean (SD)</b>	<b>Males</b>	<b>Females</b>
Health	5.14 (1.24)	5.07 (1.23)	5.20 (1.25)
Safety	4.79 (1.34)	4.72 (1.31)	4.86 (1.38)
Environmental	4.95 (1.25)	4.80 (1.26)	5.10 (1.23)

The same query from the pilot study which asked respondents to select their primary reason for buying organic food was also administered to the final study sample. As illustrated in Figure 4.2, a sizable 43% of the subjects listed 'healthier' as their number one reason for buying organic food. Furthermore, a much higher percentage of subjects chose 'safer to consume' as a principle motive (17%) compared to the percentage of subjects who selected 'kinder to the environment' (5%). Thus, the notion that eco-friendliness is the least important of the three main cited reasons for buying organic food was reasonably supported, and the factual evidence conditions containing this category only conceivably provided the weakest arguments.

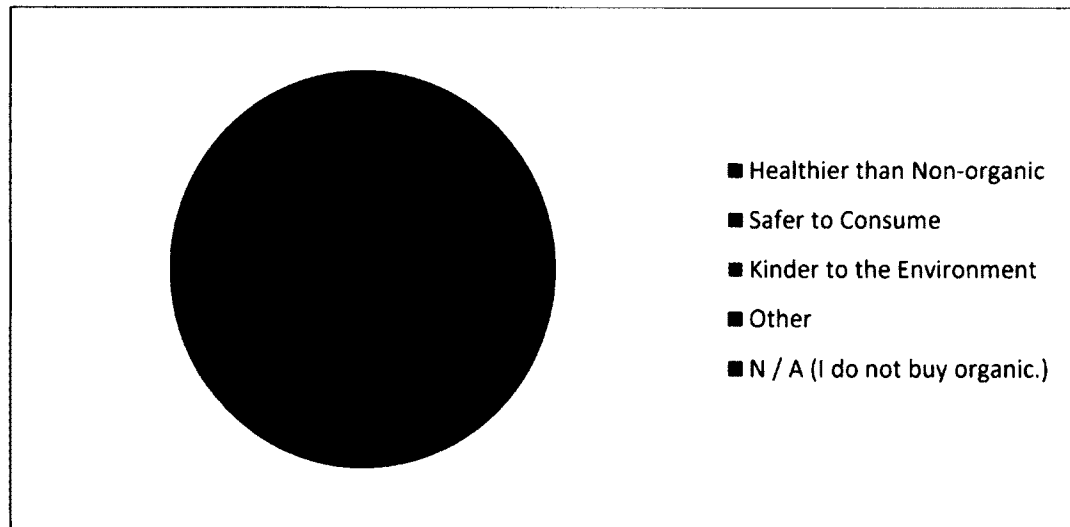


Figure 4.2 *Reasons for Buying Organic Food (Final Sample N = 341)*

### Hypothesis 1

Prior to testing the prediction in Hypothesis 1 that disconfirming evidence exposure results in more cases of belief perseverance than belief change, the 45 subjects who did not correctly recall that the disconfirming organic evidence proclaims that organic food is not better than non-organic food were removed from the subsequent analysis. Furthermore, based on the obtained qualitative responses, an additional 35 subjects were eliminated for having preconceived negative views of organic food and / or the organic industry. That is, these subjects viewed the disconfirming evidence regarding organic food as ‘confirming’ their existing beliefs. For example, one of the subjects expressed: “I never really thought organic farming was much better for you or for the environment and these facts confirm that.” Another one of these skeptical subjects in doubt states that “organic food is overrated and misleads the public to believe it is healthier.”

Consequently, of the 153 total subjects in the disconfirming evidence groups, only 73 subjects provided suitable data for assessing Hypothesis 1. Subjects were asked if they

were persuaded by the disconfirming organic evidence presented in the survey. Forty subjects yielded to the factual evidence provided and changed their beliefs, while the remaining 33 subjects retained their existing pro-organic beliefs and succumbed to belief perseverance. Thus, the prediction offered in Hypothesis 1 is not supported. Nevertheless, the qualitative responses of these 33 subjects provided a solid sample for evaluating the premise of belief perseverance.

This initial assessment indicated that some subjects had their beliefs confirmed with 'disconfirming' evidence types, while others had their beliefs disconfirmed with 'confirming' pro-organic evidence. Thus, from this point on for the sake of clarification due to this finding, 'disconfirming' evidence will be referred to as 'factual' or 'research-based' evidence, and 'confirming' evidence will be referred to as 'myth' or 'fictitious' evidence. The ANOVA and SEM models analyses included the entire sample size since dissonant feelings may arise for either evidence type. The experimental results are discussed first, followed by the SEM results and qualitative assessment.

### **Experimental Results**

Table 4.7 displays descriptive statistics. A multivariate analysis of variance (MANOVA) assessment using all respondents was necessary prior to testing the relationships predicted in Hypothesis 2. This model used all experimental variables to predict each composite dependent variable (belief disconfirmation, consumer dissonance, perceived value, purchase intention, and positive word of mouth) within a full-factorial design. The results suggested significant multivariate F (based on Wilks' Lambda) statistics for Evidence Type [ $F(5, 329) = 5.23, p < 0.001$ ] and the Credibility x Number of Reasons interaction [ $F(5, 329) = 2.34, p < 0.05$ ]. The results also suggested slightly

significant results (at the 0.10 level) for the Number of Reasons variable [ $F(5, 329) = 1.98, p = 0.08$ ] as well as for the Evidence Type x Number of Reasons interaction [ $F(5, 329) = 2.14, p = 0.06$ ]. Insignificant multivariate F statistics were found for Credibility [ $F(5, 329) = 1.13, p = 0.34$ ], the Evidence Type x Credibility interaction [ $F(5, 329) = 0.91, p = 0.47$ ], and the three-way interaction [ $F(5, 329) = 0.19, p = 0.97$ ]. The ensuing results are a reflection of the univariate, full-factorial ANOVA model analyses which include all main effects and interactions as predictors.

Table 4.7

*Means and Standard Deviations*

<i>Independent variables</i>	<b>Belief Disconfirmation</b>	<b>Consumer Dissonance</b>	<b>Perceived Value</b>	<b>Purchase Intention</b>	<b>Positive WOM</b>
<i>Evidence Type</i>					
Myth	3.19 (1.45)	2.20 (1.46)	4.97 (1.22)	4.48 (1.59)	4.84 (1.50)
Factual	3.50 (1.61)	2.90 (1.61)	4.64 (1.21)	3.82 (1.62)	4.25 (1.58)
<i>Credibility</i>					
Low	3.46 (1.58)	2.62 (1.60)	4.74 (1.26)	4.04 (1.64)	4.49 (1.61)
High	3.20 (1.48)	2.41 (1.52)	4.90 (1.19)	4.32 (1.62)	4.65 (1.52)
<i>Number of Reasons</i>					
One	3.40 (1.56)	2.38 (1.47)	4.83 (1.25)	4.06 (1.57)	4.57 (1.59)
Three	3.26 (1.51)	2.64 (1.64)	4.81 (1.20)	4.29 (1.69)	4.57 (1.54)
Overall Mean	3.33 (1.53)	2.52 (1.56)	4.82 (1.23)	4.18 (1.64)	4.57 (1.56)

Two separate full-factorial ANOVA models were used to test the predicted relationships in Hypothesis 2 between evidence strength and the dependent variables of interest, belief disconfirmation and consumer dissonance. The first predicted belief

disconfirmation (incongruence between beliefs and information), and the second predicted consumer dissonance (psychological discomfort). The first univariate model F statistic was insignificant [ $F(7, 340) = 1.47, p = 0.18$ ]. The second model F statistic was significant [ $F(7, 340) = 3.22, p < 0.01$ ]. As a result, further analysis focused on examining the main effects on consumer dissonance.

A significant evidence type main effect on consumer dissonance was found ( $F = 16.58, p < 0.001$ ). Subjects reacted to factual evidence with a mean dissonance rating of 2.90 compared to 2.20 for fictitious evidence. These results were consistent with the general hypothesis that the factual, researched-based evidence leads to more feelings of dissonance than the mythical, pro-organic evidence. However, the results revealed insignificant main effects of credibility and number of reasons on consumer dissonance ( $F = 0.73, p = 0.40$  and  $F = 2.20, p = 0.14$ , respectively). In addition, the Credibility x Number of Reasons interaction effect on dissonance was insignificant ( $F = 1.33, p = 0.25$ ). The other pair of two-way interactions and the three-way interaction were also found to be insignificant. Thus, the predictions in Hypothesis 2 were not supported since neither of the two strength factors (credibility nor the number of reasons) had an effect on cognitive dissonance (Figure 4.3).

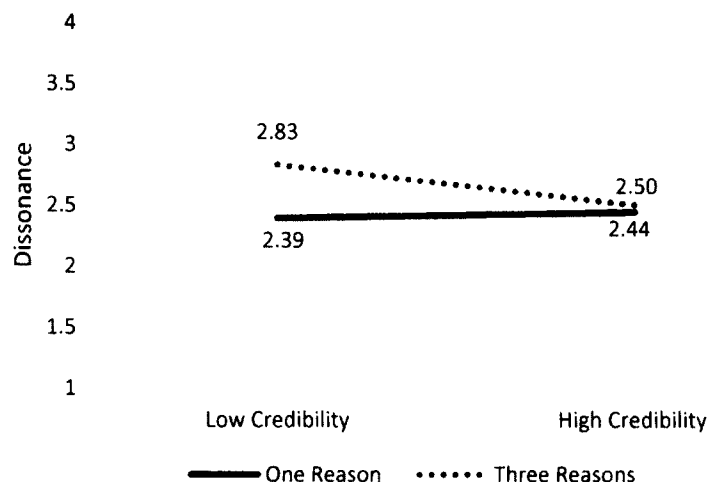


Figure 4.3 *Strength Interaction Effect (Lack of) on Consumer Dissonance*

The estimated marginal means are reported. Subjects reacted to low credibility evidence with a mean dissonance rating of 2.61 compared to 2.47 for high credibility evidence. Moreover, subjects revealed a mean dissonance rating of 2.42 for evidence containing one of the reasons for buying organic food compared to 2.66 for subjects exposed to evidence with all three reasons. These results, if significant, would only partially support Hypothesis 2 since strong evidence is defined as having high credibility and containing three motivational reasons.

### Structural Model Testing

The structural modeling approach employed followed the two-step analytical procedure (Anderson and Gerbing 1988). Although, in this case, a second measurement model was developed to examine only the constructs of interest necessary for structural equation modeling. That is, product involvement was left out of the subsequent CFA model given that the test of moderation is conducted via hierarchical multiple linear

regression. Structural equation modeling (SEM) was employed to test the remaining hypothesized theoretical model relationships shown in Figure 2.2.

The second CFA model was run on the five multi-item constructs once product involvement was removed from the overall measurement model (Table 4.8). The resulting measurement model displayed satisfactory fit statistics:  $\chi^2 = 163.6$ ,  $p < 0.001$ ,  $df = 80$ ,  $CFI = 0.983$ ,  $RMSEA = 0.055$ , and  $PNFI = 0.737$ .

Table 4.8

*Structural Path Coefficients for Theoretical Model*

<b>Theoretical Model</b>				
<b>Hypotheses/paths</b>	<b><math>\beta</math></b>	<b>t</b>	<b>p</b>	
<b>H3:</b> BD → CD	0.295	5.053	***	
<b>H5:</b> CD → PV	-0.238	-4.139	***	
<b>H6a:</b> PV → INT	0.719	13.816	***	
<b>H6b:</b> PV → WOM	0.813	16.667	***	
<b>Added Path:</b> INT → WOM	n/a	n/a	n/a	
<b>Endogenous Constructs</b>		<b>R<sup>2</sup></b>		
<b>CD</b>		0.087		
<b>PV</b>		0.057		
<b>WOM</b>		0.662		
<b>INT</b>		0.517		
<b>Model Fit</b>				
<b><math>\chi^2</math></b>	<b>df</b>	<b>RMSEA</b>	<b>CFI</b>	<b>PNFI</b>
313.1	86	0.088	0.954	0.769

The resulting chi-square fit statistic from testing the structural model is 313.1 ( $p < 0.001$ ) with 86 degrees of freedom. The model CFI was 0.954, the RMSEA was 0.088, and the PNFI was 0.769. The obtained RMSEA was above the recommended cut-



off rule of thumb of 0.07. Furthermore, the chi-square difference between the measurement model and structural model was significant ( $\Delta\chi^2 = 149.5$ ,  $\Delta df = 6$ ), which suggested inadequate structural fit to the specified theory (Hair et al. 2010). A more detailed explanation for why this occurred is included in post hoc analyses along with a revised theoretical model.

Despite the lacking fit, model hypotheses were tested by examining standardized path estimates. Consistent with Hypothesis 3, a positive relationship existed between belief disconfirmation and consumer dissonance ( $\beta = 0.295$ ,  $t = 5.053$ ,  $p < 0.001$ ). In support of Hypothesis 5, structural model results depicted a negative relationship between consumer dissonance and perceived value ( $\beta = -0.238$ ,  $t = -4.139$ ,  $p < 0.001$ ). As predicted by Hypothesis 6a and 6b, a positive relationship existed between perceived value and purchase intention ( $\beta = 0.719$ ,  $t = 13.816$ ,  $p < 0.001$ ), as well as between perceived value and positive word of mouth ( $\beta = 0.813$ ,  $t = 16.667$ ,  $p < 0.001$ ).

### **Moderation Test**

A hierarchical multiple linear regression analysis was conducted to test the hypothesis whether product involvement moderates the relationship between belief disconfirmation and consumer dissonance. In the first regression model, belief disconfirmation and product involvement, the two 'independent variables,' were included to predict consumer dissonance, the 'dependent variable.' Belief disconfirmation and product involvement accounted for a significant amount of variance in consumer dissonance:  $R^2 = 0.093$ ,  $F(2, 338) = 17.33$ , and  $p < 0.001$  (Figure 4.4).

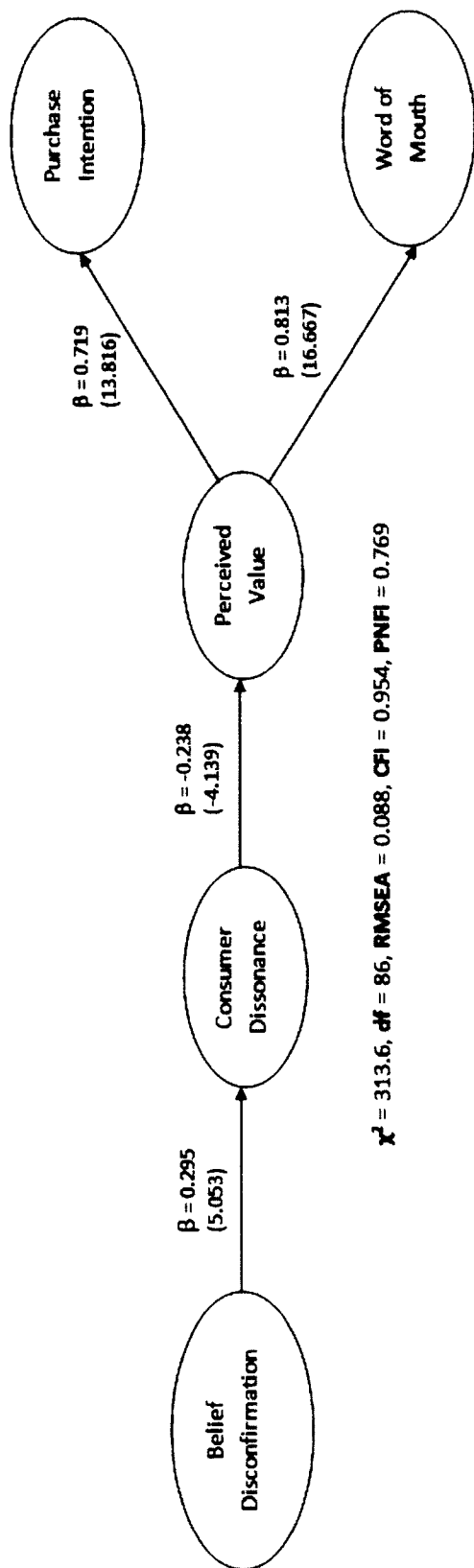


Figure 4.4 Standardized Structural Path Coefficients for Theoretical Model

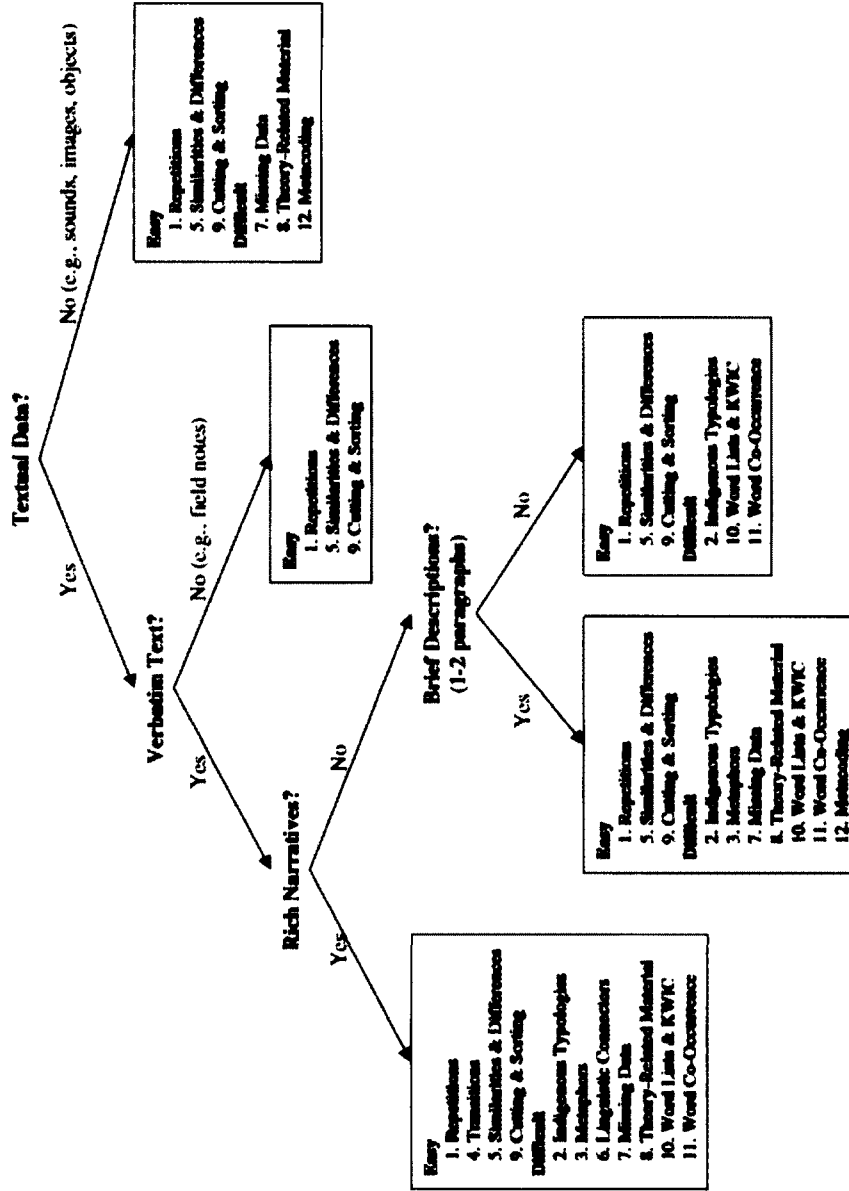
In the second regression model, the interaction between belief disconfirmation and product involvement was added to the analysis. This interaction term failed to account for a significant proportion of the variance in consumer dissonance:  $\Delta R^2 = .004$ ,  $\Delta F(1, 337) = 1.52$ , and  $p = 0.219$ . Thus, the moderating effect of product involvement on the relationship between belief disconfirmation and consumer dissonance predicted by Hypothesis 4 was not supported.

### **Qualitative Assessment**

Ryan and Bernard (2003) provide an excellent guide for analyzing text responses. The researchers suggest that analyzing text involves four tasks: 1) discovering themes and subthemes, 2) winnowing themes to a manageable few by keeping the ones that are more pertinent, 3) building hierarchies of themes, and 4) linking themes into theoretical models. The primary goal of the qualitative portion of this dissertation was to discover themes of belief perseverance, and Ryan and Bernard (2003) offer several techniques for conducting this main task (e.g. repetitions, metaphors and analogies, transitions, missing data etc.).

The researchers' decision tree seen in Figure 4.5 was utilized, and the repetitions technique was selected to facilitate the unearthing of recurring themes. Repetition is cited as one of the simplest techniques to identify themes. Occurring and reoccurring concepts were noted and connected to the subjects' verbatim expressions. Given the manageable sample of belief preserving subjects, this operation was performed manually without the use of text analysis software. Concepts that appeared frequently in the qualitative responses were presumably more likely to be themes of a particular phenomenon (Ryan and Bernard 2003). In this case, that phenomenon is belief perseverance.

## Selecting among Theme-Identification Techniques



NOTE: KWIC = key words in context.

Figure 4.5 Ryan and Bernard's (2003) Decision Tree

Potential themes for belief perseverance were explored by assessing qualitative responses of the 33 subjects discussed during the testing of Hypothesis 1. Below is a succinct selection of subjects' responses containing explanations for belief perseverance (explicit and implicit):

1. *I will not be tricked or lied to about foods my family consumes. Public information this day in age needs to be questioned, and I do not believe everything I am told.*
2. *I don't know the scope of the research and the limitations of its methodologies. I clearly see the difference when I consume, it's not psychological, it's real.*
3. *I do not find the evidence presented in this survey the least bit compelling. If anyone is convinced by a couple of paragraphs, they probably change their minds quite often.*
4. *There is just as much research to the contrary. A ten to twenty year, in depth, non-partisan study of a wide sampling of people who did and did not consume organic foods would change my stance one way or another.*
5. *Even if it is not healthier and has no better impact on the environment, from experience I know that organic dairy products last longer; therefore, I will continue buying organic dairy because it allows me to waste less which in turn is more cost effective and produces less waste (better for the environment).*
6. *I think I am not convinced because it goes against everything that I thought I knew. I think time and more research would change my stance.*
7. *I believe including some current statistics and figures (from a few creditable sources) about the overall yields of crops using both traditional and organic growing methods, might be a good way to compel more people to consider the points being made in the presented information. Nothing speaks stronger than stats from a 'well-known and established source.'*
8. *Links to research papers with factual evidence would help me believe more as I am naturally skeptic of things. I prefer primary research and facts instead of summarized secondary sources.*
9. *I still think that ultimately organic food is safer and better for the environment because it does not require extensive factory processing or chemical inductions that processed foods undergo. Factory function in itself is harmful to the environment due to the use of natural resources to maintain function and release*

*of harsh chemicals into the atmosphere. Organic foods are subject to contamination but not to the magnitude that processed foods are.*

10. *I view this type of research with skepticism. I would need answers: Who funded the research? What was the extent of the research? What type of sampling? What was the time period and length of the research? I strongly believe that less chemicals/pesticides used in the production of foods is healthier.*

Five recurring themes emerged following a careful examination of the full sample of text responses. The themes were categorized by the type of reasoning revealed (explicit and implicit) for why the subjects did not modify their beliefs. These five types were classified as Discreditors, Debaters, Skeptics, Upholders, and Fencers. Discreditors downplayed the significance of information shown to them and did this in a number of ways. For instance, several subjects stated that the evidence study was incomprehensive and not thorough or detailed enough. Some questioned the scope of the research and its methods and limitations, while others suggested that more testing was needed to validate the evidence (even though the evidence given was obtained from a meta-analysis of hundreds of studies).

Debaters argued the notion of opposing research. That is, a number of subjects cited the fact that pro-organic information also exists (e.g. “There is just as much research to the contrary.” Skeptics had their doubts and suspicion or distrust of any shared information in general. A prime example is seen in the first text response, e.g. “I do not believe everything I’m told.” Upholders were keen to make mention of additional perceived attributes that were not already debunked. For example, some subjects claimed that organic food lasts longer or tastes better. Others remarked on the perceived long term benefits and safeguards of organic food consumption and offered in depth rationale for their viewpoints (as seen in the fifth response listed). Lastly, Fencers alluded to the

concept of time in their explanations and were essentially slow adopters. These people were on the cusp of belief modification ('on the fence') yet hesitant of such a sudden change of thought.

The five themes of belief perseverance discussed are not purported to be all-inclusive. Moreover, a person characterized by belief perseverance may exhibit aspects from more than one category, as is the case in this particular study. For instance, as seen in the sixth text response, this subject displayed characteristics of being a Discrediter (calling for "more research") and being a Fencer ("more time ... would change my stance"). Likewise, the pair of subjects who reported responses eight and 10 both showed signs of being Discreditors (e.g. "I prefer primary research and facts instead of summarized secondary sources") and Skeptics (e.g. "I am naturally skeptic of things," and "I view this type of research with skepticism.") The implications of these qualitative findings (and all findings in this chapter) are discussed in Chapter Five.

### **Post Hoc Analyses**

Post hoc analyses were conducted to investigate 1) the inadequate fit obtained for the hypothesized theoretical model, and 2) the main (and interaction) effects on the marketing-related outcomes, i.e. perceived value, purchase intention, and positive word of mouth.

Firstly, examination of the standardized covariance residuals in the hypothesized structural model revealed very high values (greater than 4) surrounding variables for purchase intention and positive word of mouth. This finding suggested high collinearity between the two constructs. As seen in Table 4.2, purchase intention and positive word of

mouth had a shared covariance of  $\Phi = 0.833$  ( $p < 0.001$ ). Naturally, these two outcomes are highly correlated, and both sets of variables could have perhaps loaded onto one composite, unidimensional construct.

The decision was made to remove a constraint by estimating a path from purchase intention to positive word-of-mouth. The reasoning was that consumers are not likely to engage in positive word-of-mouth until and unless they are willing to purchase a product themselves. A new, revised theoretical model was tested once this solo change of an added path estimate is implemented.

The revised theoretical model demonstrated significantly improved fit statistics:  $\chi^2 = 168.1$ ,  $p < 0.001$ ,  $df = 85$ ,  $CFI = 0.983$ ,  $RMSEA = 0.054$ , and  $PNFI = 0.783$ . Accordingly, the chi-square difference between the measurement model and the revised structural model was insignificant ( $\Delta\chi^2 = 4.5$ ,  $\Delta df = 5$ ), which provided substantial supporting evidence for the revised theoretical model (Hair et al. 2010). Consequently, the standardized path estimates in the revised structural model were examined to ensure that all of the hypothesized relationships were still supported.

In validation of Hypothesis 3, a positive relationship existed between belief disconfirmation and consumer dissonance ( $\beta = 0.295$ ,  $t = 5.055$ ,  $p < 0.001$ ). Consistent with Hypothesis 5, revised model results depicted a negative relationship between consumer dissonance and perceived value ( $\beta = -0.232$ ,  $t = -4.024$ ,  $p < 0.001$ ). In accord with Hypothesis 6a and 6b, a positive relationship was exhibited between perceived value and purchase intention ( $\beta = 0.651$ ,  $t = 12.618$ ,  $p < 0.001$ ), as well as between perceived value and positive word of mouth ( $\beta = 0.384$ ,  $t = 8.544$ ,  $p < 0.001$ ). Table 4.9 outlines the revised model.



Table 4.9

*Structural Path Coefficients for Revised Model*

<b>Revised Model</b>				
<b>Hypotheses/paths</b>	<b><math>\beta</math></b>	<b>t</b>	<b>p</b>	
<b>H3:</b> BD → CD	0.295	5.055	***	
<b>H5:</b> CD → PV	-0.232	-4.024	***	
<b>H6a:</b> PV → INT	0.651	12.618	***	
<b>H6b:</b> PV → WOM	0.384	8.544	***	
<b>Added Path:</b> INT → WOM	0.582	13.269	***	
<b>Endogenous Constructs</b>		<b>R<sup>2</sup></b>		
CD		0.087		
PV		0.054		
WOM		0.423		
INT		0.777		
<b>Model Fit</b>				
<b><math>\chi^2</math></b>	<b>df</b>	<b>RMSEA</b>	<b>CFI</b>	<b>PNFI</b>
168.1	85	0.054	0.983	0.783

Not surprisingly, the removed constraint which estimated a structural path from purchase intention to positive word of mouth also revealed a significant, positive relationship ( $\beta = 0.582$ ,  $t = 13.269$ ,  $p < 0.001$ ).

Regarding the second portion of the post hoc analyses, Table 4.10 displays ANOVA results showing the effects of the experimental predictors on three dependent variable outcomes: perceived value, purchase intention, and positive word of mouth. Although these relationships were not hypothesized, the results warranted further appraisal.

Table 4.10

*Analysis of Variance Results for Perceived Value, Purchase Intentions, and Positive WOM*

	Perceived Value			Purchase Intention			Positive WOM		
	df	F	p	df	F	p	df	F	p
<b>Main effects</b>									
Evidence Type	1	5.08	0.03	1	12.61	0.00	1	10.22	0.00
Credibility	1	1.00	0.32	1	1.97	0.16	1	0.44	0.51
Number of Arguments	1	0.03	0.88	1	1.56	0.21	1	0.02	0.88
<b>Two-way interactions</b>									
Evidence Type × Credibility	1	2.42	0.12	1	1.86	0.17	1	3.77	0.05
Evidence Type × # of Reasons	1	3.28	0.07	1	1.20	0.28	1	6.96	0.01
Credibility × # of Reasons	1	1.53	0.22	1	3.28	0.07	1	6.69	0.01
<b>Three-way interaction</b>									
Evidence Type × Credibility × # of Reasons	1	0.01	0.92	1	0.07	0.79	1	0.11	0.75

Three separate full-factorial ANOVA models were used to test the relationships between the predictors and the three marketing outcomes. All three univariate F statistics were significant for the models predicting perceived value [ $F(7, 340) = 2.17, p < 0.05$ ], purchase intention [ $F(7, 340) = 3.59, p = 0.001$ ], and positive word of mouth [ $F(7, 340) = 4.61, p < 0.001$ ].

As portrayed in Table 4.10, significant evidence type main effects on all three outcome variables were found. Subjects exposed to factual evidence revealed a mean perceived value rating of 4.64 compared to 4.97 for those shown pro-organic, mythical evidence. The same phenomenon of higher mean outcome ratings resulting from pro-organic information exposure was observed for purchase intention ( $\bar{\chi}_{myth} = 4.48$  vs.  $\bar{\chi}_{factual} = 3.82$ ) and positive word of mouth ( $\bar{\chi}_{myth} = 4.84$  vs.  $\bar{\chi}_{factual} = 4.25$ ).

A marginally significant two-way interaction of Evidence Type x Number of Reasons was found to influence perceived value ( $F = 3.28, p = 0.07$ ), while this same interaction significantly affected positive word of mouth ( $F = 6.96, p = 0.01$ ). These interactions are displayed in Figures 4.6 and 4.7. Although all subjects reported similar mean perceived values for evidence containing one motivational reason for buying organic food ( $\bar{\chi}_{myth-one} = 4.86, \bar{\chi}_{factual-one} = 4.80$ ), subjects shown three motivational reasons indicated higher perceived value in mythical, pro-organic conditions compared to those in factual evidence conditions ( $\bar{\chi}_{myth-three} = 5.08, \bar{\chi}_{factual-three} = 4.54$ ). Moreover, similar means for positive word of mouth were reported across one-reason conditions ( $\bar{\chi}_{myth-one} = 4.63, \bar{\chi}_{factual-one} = 4.53$ ), but not in the three-reason conditions ( $\bar{\chi}_{myth-three} = 5.04, \bar{\chi}_{factual-three} = 4.07$ ).

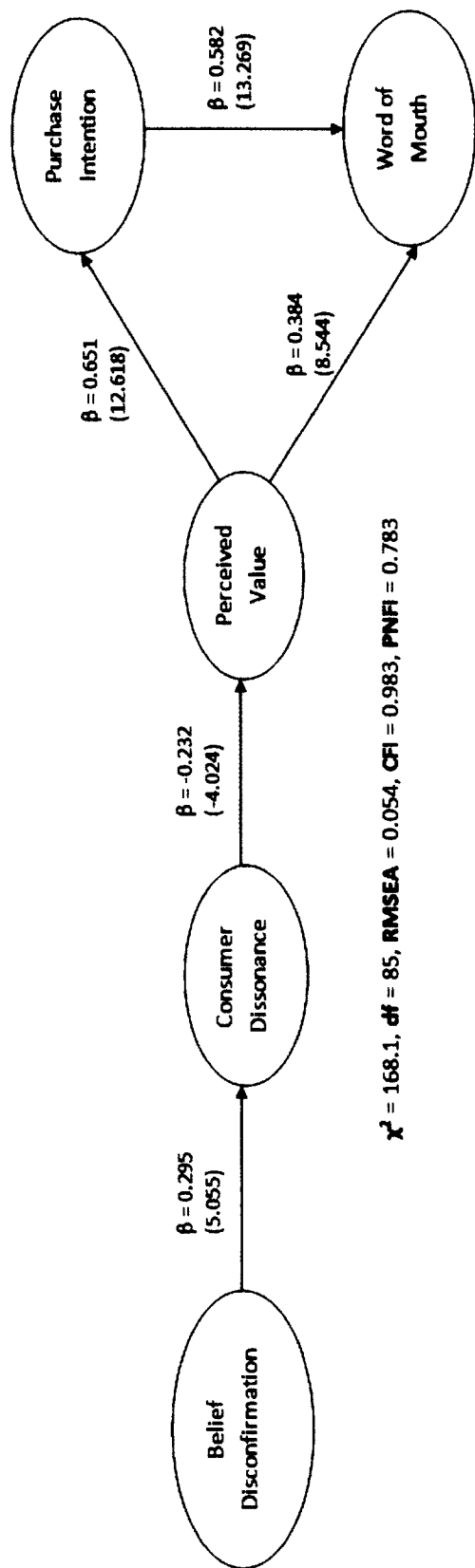


Figure 4.6 Standardized Structural Path Coefficients for Revised Model

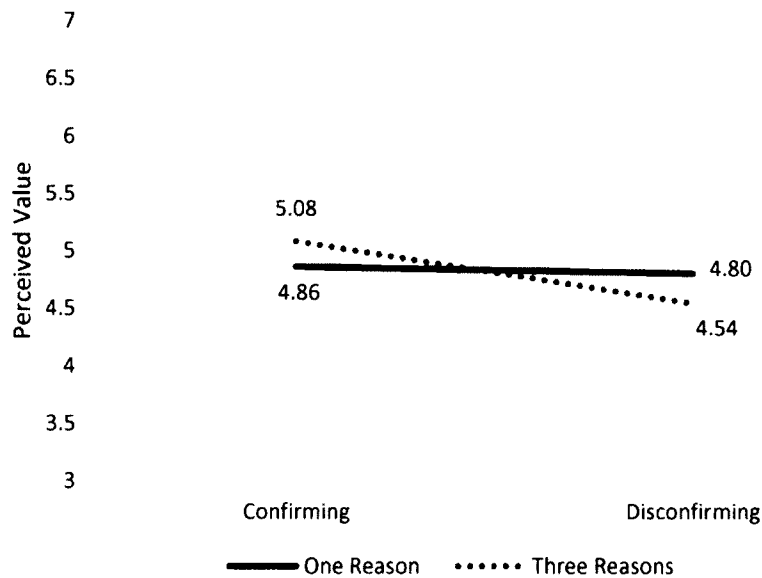


Figure 4.7 Evidence Type x Number of Reasons on Perceived Value

The Credibility x Number of Reasons interaction significantly affected positive word of mouth ( $F = 6.69, p = 0.01$ ) and, to a lesser extent, purchase intention at the 0.10 level ( $F = 3.28, p = 0.07$ ). These interaction effects on purchase intention and positive word of mouth are depicted in Figures 4.8, 4.9 and 4.10, respectively. All subjects reported similar buying intentions for evidence containing one motivational reason for buying organic food, regardless of credibility ( $\bar{\chi}_{low-one} = 4.08, \bar{\chi}_{high-one} = 4.01$ ). However, subjects shown three motivational reasons indicated higher intentions to buy in high credibility conditions compared to those in low credibility conditions ( $\bar{\chi}_{low-three} = 3.98, \bar{\chi}_{high-three} = 4.55$ ). Furthermore, slight mean differences for positive word of mouth were noted across one-reason conditions ( $\bar{\chi}_{low-one} = 4.74, \bar{\chi}_{high-one} = 4.42$ ), whereas larger mean differences were obtained from three-reason conditions ( $\bar{\chi}_{low-three} = 4.29, \bar{\chi}_{high-three} = 4.82$ ).

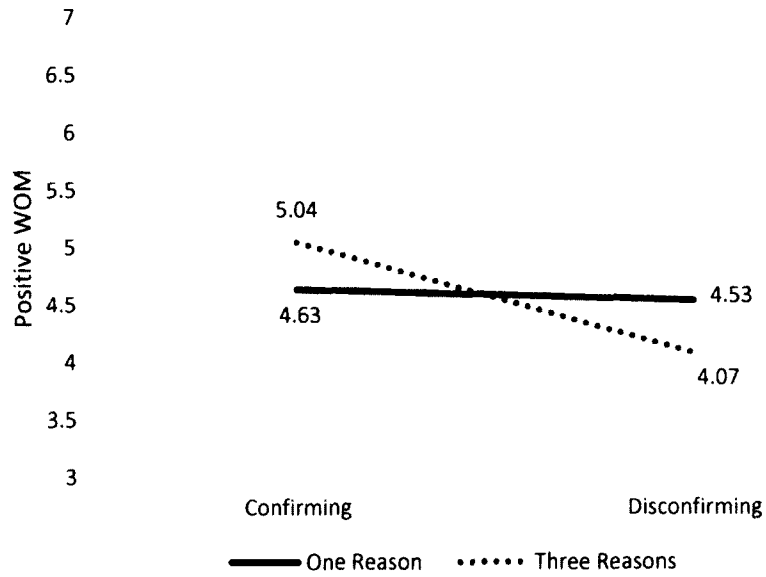


Figure 4.8 *Evidence Type x Number of Reasons on Positive WOM*

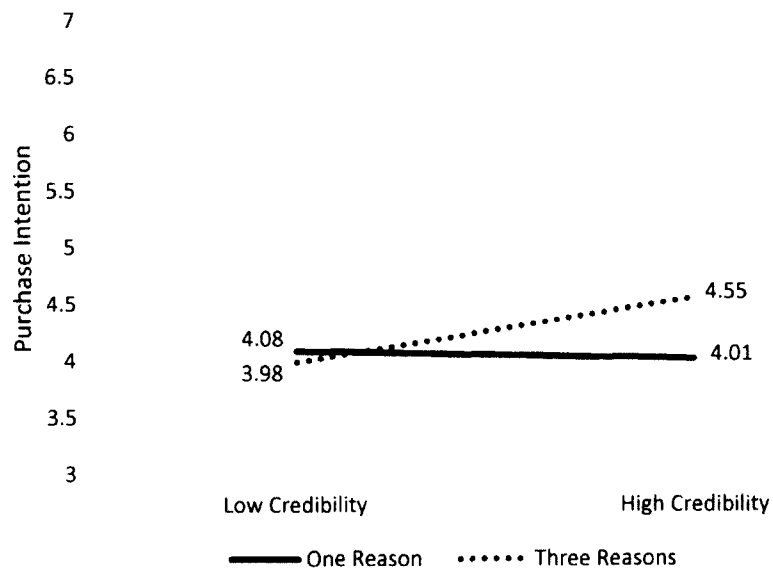


Figure 4.9 *Credibility x Number of Reasons on Purchase Intention*

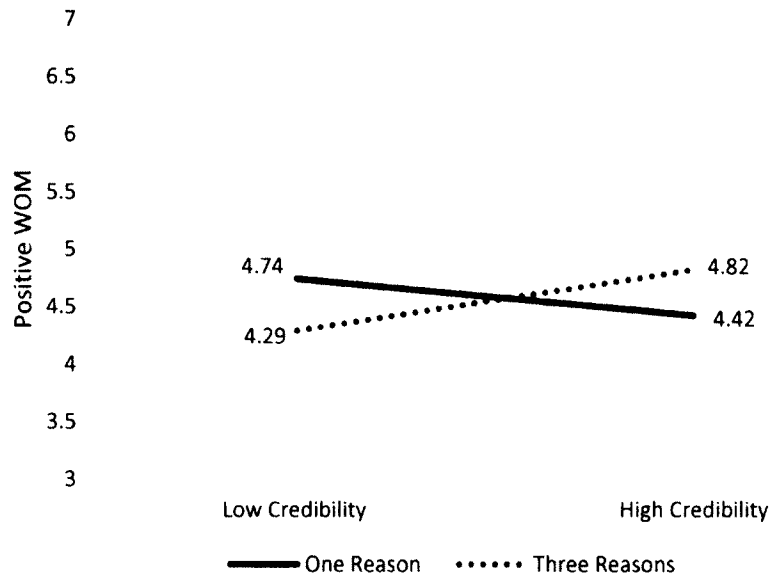


Figure 4.10 *Credibility x Number of Reasons on Positive WOM*

Given the statistically significant yet small effect size resulting from the credibility manipulation, i.e. mean ratings of 5.2 and 4.9 for the high and low credibility conditions, respectively, a more thorough investigation of this effect was warranted. A full-factorial multivariate model was run using evidence believability as a covariate. The resulting MANCOVA model was not significant [ $F(8, 340) = 1.54, p = 0.14$ ]. Consequently, the covariate was removed to check the significance of the MANOVA model. Results from the MANOVA model, however, were still insignificant [ $F(7, 340) = 1.47, p = 0.18$ ]. Thus, for all practical purposes, the credibility manipulation was not very substantial and adequate at best.

### **Summary of Findings**

The following is a brief synopsis of key findings from the overall results and analyses:

Finding 1: No support was found for Hypothesis 1 which predicts that factual evidence exposure will result in more instances of belief perseverance than belief change. The subjects who modified their beliefs outnumbered those who persisted with their existing beliefs.

Finding 2: A significant evidence type main effect on consumer dissonance was found, wherein subjects exhibit higher mean dissonance ratings for factual evidence compared to mythical, pro-organic evidence.

Finding 3: The prediction offered in Hypothesis 2 was not supported since the main effects of credibility and number of reasons (and interaction effect) on consumer dissonance were insignificant.

Finding 4: Significant evidence type main effects on perceived value, purchase intention, and word of mouth were found.

Finding 5: Statistical support was found for a two-way interaction of Evidence Type x Number of Reasons on perceived value and positive word of mouth.

Finding 6: Statistical support was found for a two-way interaction of Credibility x Number of Reasons on purchase intention and positive word of mouth.

Finding 7: A revised theoretical model provided support for Hypothesis 3, i.e. the predicted positive relationship between belief disconfirmation and consumer dissonance.



**Finding 8:** No support was found for Hypothesis 4 which predicts the moderating effect of product involvement on the relationship between belief disconfirmation and consumer dissonance.

**Finding 9:** Hypothesis 5 was supported since a negative relationship was found between consumer dissonance and perceived value.

**Finding 10:** Positive relationships were found between perceived value and both purchase intention and positive word-of-mouth, supporting Hypothesis 6a and 6b, respectively.

**Finding 11:** Five themes of belief perseverance (types of people) were identified: Discreditors, Debaters, Skeptics, Upholders, and Fencers.

## CHAPTER FIVE

### DISCUSSION OF FINDINGS, LIMITATIONS, AND FUTURE RESEARCH

This dissertation investigates the effects of belief disconfirmation on consumers' psychological thoughts and the subsequent effect of this mental conflict on behavioral intentions. The primary objective is to address three research questions regarding cognitive dissonance, confirmation bias and belief perseverance. A mixed-method research sequence was designed specifically to examine these research questions. The discussion of findings is organized based on its relation to the research inquiries. Theoretical contributions and managerial implications are presented next. Lastly, the dissertation concludes with study limitations and suggestions for future research.

**RQ1:** *Can disconfirming evidence exposure induce considerable dissonance? If so, how does varying the strength of disconfirming factual evidence affect consumer beliefs?*

From the experimental results, people exposed to factual evidence demonstrated higher levels of cognitive dissonance compared to people given pro-organic, mythical evidence. However, the strength of evidence was not shown to be a substantial factor for this particular relationship. That is, neither the main effects of evidence credibility and number of reasons nor the related interaction effect appeared to have a discernible

influence on consumer dissonance. Consequently, factual, research-based evidence could conceivably induce sufficient dissonance to influence people's existing beliefs even if such evidence is not very substantial.

More people than expected had their beliefs endorsed with 'disconfirming' evidence types, whereas others (to a lesser extent) had their beliefs disapproved with 'confirming' pro-organic evidence. This outcome of perceiving differently the two types of evidence may seem surprising. One can only speculate on possible explanations. In particular, observe that the study sample consists of college students (alumni and current). Higher education is expected to broaden perspectives, and educated people tend to be more knowledgeable about various subject matters, including seemingly popular, contemporary topics such as the organic industry. This notion of higher awareness and knowledge offers some rationale as to why so many subjects in the 'disconfirming' evidence type conditions were not surprised by the facts and, also, to why some subjects in the 'confirming' evidence type conditions expressed their doubts regarding the pro-organic content. That being said, the results offer a number of notable implications.

It is intriguing that the strength of evidence (credibility and number of reasons shown) did not prove to be a significant factor in influencing people to modify their beliefs. More specifically, the factual evidence given to all four cells in the research-based conditions was successful in changing beliefs regarding the perceived benefits of organic food. Thus, for many people, the content of the evidence, regardless of the credibility or the extent of that message, was sufficient in swaying their sentiments. This finding is consistent with previous research, e.g., Anderson, Lepper and Ross (1980), in

the debriefing paradigm which documents the changing of beliefs in the presence of weak, fictitious “evidence.”

**RQ2:** *What are the effects of dissonance resulting from belief disconfirmation on purchase-related outcomes?*

The revised structural model provided solid support for the hypothesized model relationships. A negative relationship was found between consumer dissonance and perceived value, and, not surprisingly, positive relationships existed between perceived value and both purchase intention and positive word of mouth. These findings indicated that consumers can experience dissonance due to belief disconfirmations, and this dissonance can negatively affect 1) the perceived value of a product, 2) subsequent intentions to buy, and 3) word of mouth. In other words, the dissonance evoked from disconfirming information was a detriment to peoples’ perceived value of a product and subsequent purchase-related behavior. Thus, the premise of this entire dissertation was validated accordingly.

Product involvement did not moderate the relationship between belief disconfirmation and consumer dissonance. Moreover, product involvement and dissonance revealed a marginally significant negative shared correlation. These findings appear to conflict with some previous research which suggests that messages of high involvement have greater personal relevance and, thus, tend to result in greater consequences than messages of low involvement (e.g., Petty and Cacioppo 1979; Petty, Cacioppo and Schumann 1983). Not surprisingly, the study sample comprised of college students displayed a relatively low level of product involvement on average which may explain why the case for moderation is not supported. Roughly 30% of the sample

consists of non-buyers, the majority of which stating high prices of organic food as the primary reason. However, the marginally significant, negative relationship between product involvement and dissonance was a bit unusual. Why would people who are less involved with organic food experience more dissonance (any at all) as a result of seeing disconfirming information? Perhaps highly involved people may be more adept to using various dissonance coping techniques. This phenomenon is argued further in the discussion of RQ3.

The main effects of evidence type on each of the three outcomes (perceived value, purchase intention, and positive word of mouth) were also ascertained in post hoc analyses. Yet, much like dissonance, these outcomes remained unresponsive to the main effects of credibility and number of reasons. However, a pair of two-way interaction effects of 1) Evidence Type x Number of Reasons and 2) Credibility x Number of Reasons were found on perceived value and positive word of mouth and on purchase intention and positive word of mouth, respectively. Hence, the effects of number of reasons on perceived value and positive word of mouth depended on the type of evidence; while the effects of number of reasons on purchase intention and word of mouth depended on credibility

What could be implied by these interactions? The nature of the first two-way interaction implies that consumers had stronger (less positive) perceived value and word of mouth reactions to factual information when such information contained three arguments compared to one. Similarly, the second two-way interaction suggested that consumers exhibited higher intentions to buy and greater likelihood to engage in positive

word of mouth when exposed to high credibility evidence that contained three arguments compared to one (perhaps due to receiving stronger confirmations).

**RQ3:** *Why do consumers continue to hold onto their beliefs even though they are exposed to robust, disconfirming evidence that suggests a belief change is warranted?*

As mentioned previously, Festinger (1957, 1964) points out three ways that people cope with dissonance: 1) by changing their beliefs, 2) by obtaining new information to support their existing beliefs, and 3) by reducing the importance of the dissonant factors or by disregarding it altogether. Many people who experience dissonance mitigated the cognitive conflict by modifying their existing beliefs. Nonetheless, a number of others were more defiant, succumbing to belief perseverance and revealing different routes to alleviate their feelings of dissonance. From the qualitative assessment, five themes of belief perseverance (types of people) were identified: Discreditors, Debaters, Skeptics, Upholders, and Fencers.

Some interesting parallels can be made between Festinger's (1957, 1964) dissonance coping mechanisms and the five themes of belief perseverance that emerged from the qualitative assessment. Debaters (who referred to contrary research) and Upholders (who cited attributes that were not originally mentioned) are argued to use a particular form of the second dissonance coping technique. Specifically, these people attempted to reinforce their existing beliefs with additional confirmations so that their total level of consonance outweighs the new, unsettling dissonant thoughts. Discreditors (who tried to belittle the significance of disconfirming information) and Skeptics (who were suspicious of any shared information to begin with) are clearly taking the third route

to resolving dissonance. That is, Discreditors were essentially reducing the importance of dissonant factors by criticizing or invalidating the disconfirming information in various ways. On the other hand, Skeptics, due to their general sense of suspicion and distrust for any shared information, found it easier to ignore the disconfirming information all together by calling it hoax. Skeptics perceived themselves as taking the high road and saving themselves from being deceived when, in reality, they were only deceiving themselves from learning something new that opposes their existing beliefs. Why? The results from this research clearly show that consonance is the status quo, and remaining in the status quo could make life less complicated. People who modified their beliefs as a result of considering the disconfirming evidence clearly fall into Festinger's first method of dissonance coping. Fencers (who showed signs of belief modification but are a bit hesitant) were likely to take the first route to dissonance resolution and change their beliefs with additional persuasion.

### **Theoretical Contributions**

The study examines possible links between the pervasive psychological phenomena of confirmation bias and belief perseverance to Festinger's (1957) theory of cognitive dissonance. Consumer research on cognitive dissonance has limited the scope of this extensive theory by narrowly focusing on occurrences of dissonance after a consumer has made a decision or a purchase. Although previous research on post-purchase dissonance (or buyer's remorse) provides important theoretical and practical implications, this dissertation demonstrates that dissonance may arise in numerous other ways outside decision making.

Among the main goals of this study is to show that dissonance could arise prior to a purchase because of belief disconfirming evidence regarding perceived product benefits. The results reveal that dissonance can be evoked by presenting people with disconfirming evidence about the perceived benefits of buying and consuming organic foods. An empirical test of dissonance provocation stemming from perceived belief disconfirmations connotes the negative effects of dissonance on marketing-related outcomes. Therefore, this research offers an alternative approach to testing cognitive dissonance theory.

An examination of the extant literature exposes a lack of existing scales for measuring a person's proclivity to belief perseverance. In addition to displaying a strong connection between dissonance theory and belief perseverance, the qualitative assessment of why consumer beliefs persevere (along with the five emerging themes) provides a solid foundation for a scale development on belief perseverance. Future research employing such a scale could serve as a valuable tool for consumer researchers to identify and examine obstinate consumers.

### **Managerial Implications**

Academic research on cognitive dissonance would only benefit marketing practitioners if it provides guidance as to what can and should be done about a customer's dissonance (Hunt 1970). Marketing managers are cognizant that being able to successfully reduce dissonance levels of their patrons provides a vital competitive advantage. In this study, the common link shown between cognitive dissonance and belief perseverance has shed light on the question of why customers' erroneous beliefs



can persist despite exposure to substantial disconfirming evidence, and this offers important implications for marketing strategy.

Generally speaking, it can be argued that consumers tend to adopt inaccurate information when such information promotes a potentially ingratiating self-concept. Given that organic food consumption is usually considered prosocial, and therefore potentially ingratiating, consumers may aspire to be perceived as folks who consume organic food. As such, consumers with a positive orientation toward organic food promotion, in particular, may make themselves vulnerable to accepting superficial (or even inaccurate) information if such information promotes their self-image. Although this effect is not found to be exacerbated in instances of high product involvement, this study still has important implications for policy makers and marketers in their quest to educate consumers and influence their behaviors. Moreover, the qualitative assessment of belief perseverance is a step forward for more constructive communication between policy makers, marketers, and customers about how to mitigate the enactment of incorrect beliefs.

Consider-the-opposite strategy (Ross, Lepper and Hubbard 1975; Anderson 1982; Lord, Lepper and Preston 1984) may be the only available technique capable to successfully remedy the confirmation bias and instances of belief perseverance. The technique simply involves encouraging consumers to reflect on reasons that their subjective beliefs might be incorrect and why the opposing view may instead be true. This study explored open-ended statements to reveal why beliefs persist in the face of disconfirming evidence. The subsequent five emerging themes (or types of consumers) infer additional corrective strategies for overcoming belief perseverance. In other words,

the five emerging themes of belief perseverance can potentially offer some guidance to managers on how to persuade consumers to interrogate their beliefs and rebuff their incorrect preconceived notion about certain products or product attributes. Moreover, managers may also gain insight for effectively disseminating product information and strengthening arguments against misguided consumption. For example, a corrective strategy for Debaters, who are sure to emphasize the presence of contrary research, may be to present both arguments (disconfirming and confirming) together so that the evidence does not seem biased. A better strategy for Discreditors, on the other hand, could perhaps entail using more comprehensive, robust evidence to bolster the disconfirming information from attacks on its integrity. Thus, the preceding research on consumers' beliefs about organic foods and subsequent reactions to disconfirmations could provide important inferences to help in the formulation of communication, environmental, and policy strategies to educate (and update) consumers whenever new, accurate information emerges.

### **Limitations and Future Research**

The research presented in this dissertation has several limitations. First, the study relies on data obtained from a sample of undergraduate and graduate college students and university alumni. While such a group may not represent a standard sample of consumers, college students (current and former) are consumers that may have strong subjective beliefs about certain products. Moreover, using student samples is not uncommon for empirically testing a theory. Supporters of using student subjects (e.g., Gordon, Slade and Schmitt 1986; Greenberg 1987; Lee and Baskerville 2003) argue that research should focus less on generalizability and thus student samples can be appropriate

for building a theory and emphasizing its internal mechanism. Consequently, there is a reasonable justification for using student subjects when testing theory such as the dissonance theory.

Nevertheless, future research on this topic would greatly benefit from different samples of more typical consumers who have high involvement with organic food. For example, Lea and Worsley (2005) find that women are more positive about organic food than men. Specifically, their findings suggest that women are more likely to believe that organic food has more vitamins and minerals than conventional food. The results in this dissertation corroborate this notion since female subjects reported slightly higher means compared to male subjects for each of the three perceived benefits of organic food.

Second, although experimentation is employed in the study, the resulting data from the survey responses are essentially cross-sectional in nature. An experimental design involving longitudinal data is more suitable to investigate the theorized causal relationships via structural equation modeling. Avenues for future research could include the examination of long term effects of belief disconfirmation on subsequent consumer behavior. This dissertation suggests that belief disconfirmations can induce dissonance which in turn can negatively impact marketing-related outcomes. Managers may derive greater practical implications from a long-term assessment of these effects.

Third, the perceived value construct is measured using only one of Sweeney and Soutar's (2001) four proposed dimensions, i.e. quality value. Emotional, price, and social value are all left out of the measurement theory based on the view that such dimensions do not fit with the context of the study. Holbrook and Hirschman (1982) suggest that focusing single mindedly on the consumer as information processor could limit our

perception of consumer behavior due to neglecting the experiential aspect. Therefore, a fruitful avenue of future research may involve a hedonic assessment of value. For example, Babin, Darden and Griffin (1994) propose a two-dimensional measure comprising utilitarian and hedonic shopping value. This conceptualization could provide a better measure of value since emotional aspects tend to spill over into information processing and decision-making (Holbrook and Hirschman 1982). Thus, people buy products not only for what they can do but also for what they mean.

Fourth, the manipulation of evidence types into confirming and disconfirming conditions did not work as efficiently as anticipated. Over 20% of subjects in disconfirming conditions are found to have preconceived negative views of organic food and/or the organic industry. Hence, many subjects viewed the disconfirming evidence regarding organic food as “confirming” their existing beliefs. Future research could employ a quasi-experimental design to mitigate this quandary. For instance, instead of randomly assigning subjects to one of the eight conditions, subjects can be assigned to disconfirming (or confirming) conditions based on how they respond to a certain criterion (e.g. subjective beliefs, attitudes, etc.). This may provide the researcher with superior control, albeit at the expense of internal validity since quasi-experimental results are especially prone to confounding variables.

Finally, the revised theoretical model contains an added structural path from purchase intention to positive word-of-mouth, whereas prior research generally supports a reverse causal path from word-of-mouth to purchase intention. The justification for this removed constraint is based on the notion that consumers are unlikely to engage in positive word-of-mouth until and unless they are willing to purchase a product

themselves. Hence, this study defines word-of-mouth as the consumer's expressed likelihood of making positive comments about organic food, while other research examines word-of-mouth from the information received (or sought) by the consumer point of view. Future research could examine additional outcomes following belief disconfirmations such as information seeking behavior (confirming or disconfirming). Those who seek confirming information to corroborate their own views following a belief disconfirmation may be especially prone to yielding to confirmation bias.

One area of interest that may particularly exacerbate the confirmation bias is consumer superstitions. Consumers having superstitious beliefs and making uncanny associations is not uncommon in the marketplace, and this phenomenon may lead to irrational behavior. For example, Block and Kramer (2009) examined superstitious beliefs in the context of product performance expectations and found that consumers who do not hold superstitious beliefs adhere to the rational choice paradigm more so than consumers who do have certain superstitions. That is, consumers' superstitious beliefs can lead to making purchases that run counter to economic rationality. Interestingly enough, results from Mowen and Carlson (2003) suggest a negative association between superstitious beliefs and attitudes regarding genetically modified foods. Examining whether the same relationship exists between consumer superstitions and organic food beliefs could provide additional explanation to instances of belief perseverance in this study.

## **APPENDIX A**

### **EXPERIMENTAL STIMULI**

1) *Disconfirming x High Credibility x 3:*

Stanford University researchers evaluated data from hundreds of studies and concluded that fruits and vegetables labeled organic were no more nutritious and no less likely to be contaminated by dangerous bacteria like E. coli than conventionally grown foods, which tend to be far less expensive. The researchers also found no obvious health advantages to organic meats. The Stanford University researchers affirmed that there is currently no direct evidence that consuming an organic diet leads to improved health or lower risk of disease. Furthermore, organic farming methods are not as environmentally friendly as once thought since these methods have lower yields and, thus, produce much less food than conventional farming on the same land area.

2) *Disconfirming x High Credibility x 1\*:*

Stanford University researchers evaluated data from hundreds of studies and concluded that organic farming methods are not as environmentally friendly as once thought since these methods have lower yields and, thus, produce much less food than conventional farming on the same land area.

3) *Disconfirming x Low Credibility x 3:*

Delta Community College researchers evaluated data from hundreds of studies and concluded that fruits and vegetables labeled organic were no more nutritious and no less likely to be contaminated by dangerous bacteria like E. coli than conventionally grown foods, which tend to be far less expensive. The researchers also found no obvious health advantages to organic meats. The Delta Community College researchers affirmed that there is currently no direct evidence that

consuming an organic diet leads to improved health or lower risk of disease. Furthermore, organic farming methods are not as environmentally friendly as once thought since these methods have lower yields and, thus, produce much less food than conventional farming on the same land area.

4) *Disconfirming x Low Credibility x 1\**:

Delta Community College researchers evaluated data from hundreds of studies and concluded that organic farming methods are not as environmentally friendly as once thought since these methods have lower yields and, thus, produce much less food than conventional farming on the same land area.

5) *Confirming x High Credibility x 3*:

Stanford University researchers evaluated data from hundreds of studies and concluded that fruits and vegetables labeled organic were more nutritious and less likely to be contaminated by dangerous bacteria like E. coli than conventionally grown foods. The researchers also found various health advantages to organic meats. The Stanford University researchers affirmed that there is direct evidence that consuming an organic diet can lead to improved health and lower risk of disease. Furthermore, organic farming is significantly less disturbing for the environment compared to conventional farming.

6) *Confirming x High Credibility x 1\**:

Stanford University researchers evaluated data from hundreds of studies and concluded that organic farming is significantly less disturbing for the environment compared to conventional farming.



7) *Confirming x Low Credibility x 3:*

Delta Community College researchers evaluated data from hundreds of studies and concluded that fruits and vegetables labeled organic were more nutritious and less likely to be contaminated by dangerous bacteria like E. coli than conventionally grown foods. The researchers also found various health advantages to organic meats. The Delta Community College researchers affirmed that there is direct evidence that consuming an organic diet can lead to improved health and lower risk of disease. Furthermore, organic farming is significantly less disturbing for the environment compared to conventional farming.

8) *Confirming x Low Credibility x 1\*:*

Delta Community College researchers evaluated data from hundreds of studies and concluded that organic farming is significantly less disturbing for the environment compared to conventional farming.

\*Weak-condition evidence is composed assuming that environmental friendliness is the least important of the three reasons for buying organic. This assumption is evaluated and corroborated via two different samples (see Figure 4.1 and Figure 4.2).

## **APPENDIX B**

### **MEASUREMENT INSTRUMENTS**

### Measuring Subjective Beliefs

Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Agree 6	Strongly Agree 7
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I. Perceived Health Benefits: a consumer's subjective beliefs regarding the perceived healthiness of organic food.

1. The consumption of organic food enhances my health.
2. I believe that organic food enables me to live healthy.
3. I am of the view that the consumption of organic food has a health-promoting effect.
4. Organic food and a health-conscious lifestyle match well.

II. Perceived Environmental Benefits: a consumer's subjective beliefs regarding the positive effects that organic products can have on the environment.

1. The production of organic food goes easy on resources.
2. I am of the opinion that during the production of organic food the environment is highly valued.
3. Organic foods are environmentally friendly products.
4. Organic food and environmentalism match well.

III. Perceived Safety Benefits: a consumer's subjective beliefs regarding the positive effects that organic food can have on safe consumption.

1. I feel that organic food is free of chemical residues.
2. I am of the opinion that organic food is not contaminated.
3. Organic food ingredients are free of pesticides.
4. I believe that organic food features high food safety.

Note: All three dimensions of perceived benefits of organic food adapted from Bauer, Heinrich and Schäfer (2013).

### Measuring Belief Disconfirmation

Congruency (Beliefs/Information): measures the similarity (or lack thereof) between a consumer's prior beliefs about organic food and the new evidence that he or she has been exposed to (Gürhan-Canli and Maheswaran 1998).

1. How different was the information from what you expected? *not at all / very different*
2. Indicate the extent to which the information was: *totally expected / unexpected*
3. Indicate the extent to which the information was: *not at all surprising / very surprising*

### Measuring Consumer Dissonance

Not at All	-	-	Neutral	-	-	Very Much
1	2	3	4	5	6	7

Discomfort: measures the extent to which a person is experiencing a state of psychological tension and is troubled by it, i.e. a measure of cognitive dissonance (Elliot and Devine 1994).

1. uncomfortable
2. uneasy
3. bothered

### Measuring the Moderator

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Involvement: measures a consumer's level of interest in organic food (adapted from Beatty and Talpade 1994).

1. In general I have a strong interest in organic food.
2. Organic food is very important to me.
3. Organic food matters a lot to me.
4. I get bored when other people talk to me about organic food. (r)
5. Organic food is very relevant to me.

### Assessing the Manipulation

Evidence Believability: measures the degree of agreement with the following evaluative items regarding the content of the evidence (Chang 2011).

1. believable
2. trustworthy
3. credible
4. reasonable
5. convincing
6. unbiased

### Measuring the Outcome Variables

Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Agree 6	Strongly Agree 7
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I. Consumer Perceived Value (Sweeney and Soutar 2001; Walsh, Shiu and Hassan 2014)

Factor 1: Quality Value

1. Has consistent quality
2. Is well made
3. Has an acceptable standard of quality

Factor 2: Emotional Value

4. I enjoy it
5. Makes me want to consume it
6. Makes me feel good

Factor 3: Price Value

7. Is reasonably priced
8. Offers value for money
9. Is good for the price

Factor 4: Social Value

10. Help me feel accepted
11. Improves the way I am perceived
12. Makes a good impression on other people

II. Purchase Intention: measures the inclination of a consumer to buy (or at least try) organic food in the future (adapted from Putrevu and Lord 1994).

1. It is very likely that I will buy organic food.
2. I will purchase organic food the next time I need groceries.

3. I will definitely try to buy organic food.
4. Suppose that a friend called you to get your advice in his/her grocery shopping trip. Would you recommend him/her to buy organic?

III. Positive Word of Mouth: a consumer's expressed likelihood of making positive comments about organic food is measured in this scale (adapted from Brüggem, Foubert, and Gremler 2011).

1. I am likely to say positive things about organic food to other people.
2. I am likely to recommend organic food to a friend or colleague.
3. I am likely to say positive things about organic food in general to other people.
4. I am likely to encourage friends and relatives to buy organic food.

IV. Willingness to Pay a Price Premium: the amount a customer is willing to pay for organic food over conventional food of the same package size or quantity (adapted from Netemeyer et al. 2004).

1. The price of organic food would have to go up quite a bit before I would switch to non-organic.
2. I am willing to pay a higher price for organic food than for non-organic food.
3. I am willing to pay \_\_\_% more for organic food over non-organic food:

0%	5%	10%	15%	20%	25%	30% or more
1	2	3	4	5	6	7

4. I am willing to pay a lot more for organic food than non-organic food.

### Subjective Beliefs (Measurement #2)

Compared to your beliefs before you were exposed to the factual information, use the sliding scales below to indicate how your beliefs about organic food have changed:

1. I now believe that organic food is:

*Less Healthy / Unchanged / More Healthy*

2. I now believe that organic food is:

*Less Safe to Consume / Unchanged / More Safe to Consume*

3. I now believe that organic food production is:

*Less Environment-Friendly / Unchanged / More Environment-Friendly*

### Social Desirability Bias

Not True 1	- 2	- 3	Neutral 4	- 5	- 6	Very True 7
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Short Balanced Inventory of Desirable Responding Scale (Short BIDR-6)  
(Bobbio and Manganelli 2011; Paulhus 1984)

1. My first impressions of people usually turn out to be right.
2. I always know why I like things.
3. Once I've made up my mind, other people can seldom change my opinion.
4. I am fully in control of my own fate.
5. I never regret my decisions.
6. I am a completely rational person.
7. I am very confident in my judgments.
8. It's all right with me if some people happen to dislike me.
9. I sometimes tell lies, if I have to.
10. There have been occasions when I have taken advantage of someone.
11. I always obey laws, even if I'm unlikely to get caught.
12. I have said something bad about a friend behind his or her back.
13. I have never dropped litter on the street.
14. I have done things that I don't tell other people about.
15. I have taken sick-leave from work or school even though I wasn't really sick.
16. I have some pretty awful habits.

## Qualitative Examination

*All subjects:*

- 1) What was your reaction to the researchers' report on organic food? Please describe your reaction in as much detail as you can.

*Belief perseverance:*

- 2) Why were you not convinced by the evidence presented to you? What additional evidence or information would help you change your stance? Please explain in as much detail as you can.

*Belief change:*

- 2) Why were you convinced by the evidence presented to you? What was the most significant factor in changing your perspective? Please explain in as much detail as you can.

*All subjects:*

- 3) What do you think is the purpose of this study?



**APPENDIX C**

**HUMAN USE APPROVAL LETTER**



LOUISIANA TECH  
UNIVERSITY

MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Mr. Adel Darrat and Dr. Bruce Alford  
 FROM: Dr. Stan Napper, Vice President Research & Development  
 SUBJECT: HUMAN USE COMMITTEE REVIEW *Stan Napper*  
 DATE: May 5, 2016

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

**"Examining Consumers' Cognitive and Behavioral Responses to  
Belief Disconfirmation"**

HUC 1425

The proposed study's revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on May 5, 2016 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond May 5, 2017.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Dr. Mary Livingston at 257-2292 or 257-5066.

A MEMBER OF THE UNIVERSITY OF LOUISIANA SYSTEM

P.O. BOX 3092 • RUSTON, LA 71272 • TEL: (318) 257-5075 • FAX: (318) 257-5079

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