MODIFYING THE THEORY OF PLANNED BEHAVIOR WITH SELF-REGULATORY FOCUS: A STUDY OVER ENCOURAGING WATER CONSERVATION BELIEFS AND INTENTIONS AMONG HISPANICS IN THE AMERICAN SOUTHWEST

Cameron Woolf, B.A

A thesis submitted to the Graduate Council of
Texas State University in partial fulfillment
of the requirements for the degree of
Master of Arts in Interdisciplinary Studies
with a Major in Interdisciplinary Studies
December 2014

Committee Members:
Gwendolyn Hustvedt
Jiyun Kang
Mira Ahn

FAIR USE AND AUTHOR'S PERMISSION STATEMENT

Fair Use

Duplication Permission

ACKNOWLEDGEMENTS

I'd like to thank my committee members for their guidance, my fellow graduate students for their words of encouragement, and my friends and family for their enthusiasm towards my studies.

TABLE OF CONTENTS

Page

LIST OF TABLES

Table **Page**

LIST OF FIGURES

Figure **Page**

CHAPTER I: INTRODUCTION AND PURPOSE

Background

The coming decades of the 21st century are expected to bring about dramatic changes to both society, and the natural environment. Climate change, population growth, and technological upheaval are going to play key roles in shaping the future communities. In the United States, particularly in the Southwestern, climate change is expected to bring about persistent drought conditions that threaten to disrupt communities. The current drought in the American Southwest is currently the 5th most severe since 1000 AD, and is beginning to cause severe long-term damage to regional ecosystems. If the climate continues to warm as expected, the Southwest could be suffering consistently from exceptional drought conditions. Some researchers believe that by 2050, nearly 80% of years will be at or exceeding the severity of the current drought conditions (Fraser 2014). Dust Bowl like conditions are expected to be commonplace by the mid to late 21st century (Seager and Ting 2002). The current drought in the American Southwest, which has been ongoing for nearly 14 years (Fraser 2014), could very well be the new normal. The lack of an adequate and stable water supply in the region could have a dramatic effect on ecosystems and economic development alike. Adaptation to these factors will be crucial in ensuring the resilience of regional communities as well as the natural environment. As such the goal of this study is to present potential solutions and suggestions on how to encourage water conservation behavior, and the adoption of water conservation technology. This study will focus particularly on Hispanic residents of the Southwest, especially those who are living in Texas and California. These two states are already the most populated in the region, and are also experiencing the largest population

growth. Much of that population growth is coming from the Hispanic population. The future participation of this group is seen as crucial for the success of any water conservation efforts. This section of the paper will first provide further background information on the water scarcity challenges facing the Southwest, current water conservation efforts and policies, followed by a justification for selecting the Hispanic population as the subject to further water conservation efforts. Chapter 1 concludes with a section about the purpose of this study, and introduces the basic theoretical framework for the rest of the paper.

One of the biggest and most noticeable consequences of the drought has been its effect on agriculture, particularly in California. Nearly 80% of the state is now in an "extreme or exceptional" drought. On the economic side, the Californian economy is expected to lose over $2 billion dollars as result of the droughts effect on agriculture. At least 17,000 part seasonal agricultural jobs are also expected to be lost (Howard 2014). In general, agriculture has a difficult time adapting to persistent drought conditions. The main response from agriculture to reduced flows from reservoirs has been to supplement that loss with increasing ground water consumption. In California, the agricultural sector is recovering 75% of its water shortfalls by increasing groundwater pumping. However, critics note that the long term viability of such a response is very questionable. Despite the severe local economic consequences of the drought, food prices in California have remained relatively stable due to imports. This has masked the real vulnerability of the state's agricultural sector. While the effects on agriculture are certainly striking, this study is primarily concerned with how the drought affects urban consumers.

For urban residents of the drought stricken Southwest, the most immediate and obvious effects have been water restrictions, rapidly declining reservoirs, and water

rate price hikes. In California, unprecedented water restrictions have been put in place, particularly on residents in the southern part of the state. Activities such as washing personal vehicles with a hose, and excessive run off water of any kind are strictly prohibited (Steinmetz 2014). Lawns are also to be watered on a tightly controlled schedule. Heavy fines can be imposed on violators. According to the State Water Resources Control Board, some 50% or more of daily urban water use goes into lawns and landscapes, making these activities easy targets for water restrictions. The State is also encouraging residents to report any wasteful practices they observe in their neighborhoods, shopping centers, or work places. Perhaps the most iconic result of the drought has been the significant reduction in reservoir levels all over the Southwest. Many reservoirs in the state are near or have exceeded record low levels, particularly in the state's largest and most used reservoirs, such as Lake Shasta, which is at 31% capacity. Other reservoirs in Southwest are also experiencing exceptionally low levels (LA Times 2014). Lake Mead for example, which serves as a major reservoir for the Southwest, is at its lowest level since the Hoover Dam was constructed in the 1930's. Texas is also experiencing its fair share of extreme drought and lower lake levels. Low lake levels often result in reduced recreation whenever infrastructure such as marinas and boat ramps are unable to reach the water's edge. Local businesses are often hurt economically by such developments. Not only are these low reservoir levels harmful to the local economy, they are also strong psychological reminder of the effects of the drought. Water rate increases are also a common side effect of severe drought, and can often compound other economic consequences of drought. Rate increases can sometimes be dramatic. For example, in Austin, Tx and San Francisco, Ca, water rates have increased nearly 50% over the past 5 years (Circle of Blue 2014). Many experts expect such rapid jumps in rates to

become more commonplace due to climate change. The combination of decrease and less predictable participation, tied together with population growth almost guarantees water scarcity going forward. Luckily, conservation efforts are underway, and all of the most visible effects of drought for urban consumers are often addressed directly by policy.

In general, water conservation programs can focus on either supply side management, or demand side management. Supply side management is largely the responsibility of the water utility company. It involves adequately managing water resource and distribution networks in a way that minimizes loss. Techniques for conservation include accurately metering customers, and ensuring that reservoirs are properly managed. Leaks are by far the largest source of lost water for utilities, accounting for up to 14% to 60% of all water losses (Environmental Protection Agency 2014). Programs to replace leaky pipes and transmission equipment are the key intervention points. Alternatively, utilities can seek to increase the production of groundwater in order to offset falling reservoirs. Of course this strategy is only a temporary fix, and does not constitute actual conservation. Demand side management is where the majority of water conservation efforts are focused. These programs are generally broken down into three types of conservation tools; namely technical solutions, rate setting, and educational outreach.

Technical solutions for water conservation involve to deployment of efficient water use technologies. These include things like low flow shower heads, toilets, and faucets, as well as high efficiency dish and clothes washers. Sophisticated lawn irrigation systems also fall under this category. Often time's water utilities will offer rebates for the adoption of this type of technology, or in some cases even give away the technology for free. Furthermore, rebate programs still require that customers

have enough money up front to afford the technology and installation. This can sometimes bar lower income residents from participating. However, technological solutions don't necessarily have to be expensive (Environmental Protection Agency 2014). Several low cost techniques, such as displacing toilet tank reservoirs levels so that the gallon per flush rate is lower, are easy and cheap to implement. Still, this type of water conservation solution depends upon utility customers being educated about the technology. Educational programs seek to encourage and modify individual's behavior, and to make them aware of the available water conservations solutions. These programs focus on teaching utility customers about available water conservation tech, as well as informing about best practices with regards to water use. Often time's informational handouts are distributed with bills reminding customers of available options. For behavioral recommendations, things like not leaving the water running while brushing your teeth, or taking shorter showers are typically on the list. Customers are also told to avoid watering their lawns in the middle of the day in order to reduce water loss due to evaporation. Asking customers to immediately report any and all water leaks is also an important. Educating utility customers on water efficient technologies is a priority, and is typically conveyed in terms of how many gallons could be saved by switching to new technologies. Making the financial benefits salient is also a goal, as it shows customers that they have a monetary incentive to conserve. Perhaps the most common and well documented way to encourage demand side water conservation is the use of tiered rate structures. In their most basic form, tiered rate structures escalate the cost per gallon as customers use more water. Therefore, customers have a strong financial incentive to conserve water in order to avoid paying the higher rates. These structures are especially useful for encourage

conservation behavior among larger commercial consumers, who could stand to reduce their expenses substantially by reducing water use.

The recent prolonged drought conditions are especially concerning given the fact that the Southwest is one of the fastest growing regions in the United States. According to the EPA, the region has grown by about 25% of the last decade, more than double the national average of 9.7% (Environmental Protection Agency 2014). Immigration to the region, particularly from Central and Latin America, has accounted for 30% to 60% of the population growth (Steinmitz 2014). In California, immigration is for a majority of the state's population growth over the last 10 years. In fact, nearly 30% of California's current population was foreign-born (Parker 2014). The current population of California is around 38 million, and is expected to increase to over 50 million by 2060 (9). At this point nearly half of all Californians will be Hispanic (California Department of Finance 2013). The growing population in area will serve to further increase pressure on existing and fragile water resources. Given the increased importance of the Hispanic population in the region, encouraging water conservation among this demographic will be a key tool in mitigating the worst effects of the drought. Understanding the beliefs and actions that Hispanics in the area have towards water conservation is a key step to developing good policy.

Purpose

The goal of this study is to understand the role that water conservation beliefs play in the adoption of conservation behaviors and technologies. Increasing or encourage these beliefs among Hispanic residents in the Southwest is a potentially viable way to maximize the effectiveness of demand side reduction in water consumption. This study involved the use of the Theory of Planned Behavior in order

to measure water conservation beliefs of various types, and the Theory of Self-Regulatory Focus in order to influences those beliefs. More specifically, this study explores how priming subjects to be either prevention or promotion focus, as laid out in the Theory of Self-Regulatory Focus, could modify certain aspects of the Theory of Planned Behavior. Understanding how these modified variables influence intention to perform certain water conservation behaviors is also crucial. Intention is the main predictor of actual behavior under the Theory of Planned Behavior, and most accurately correlates with actual changes in behavior. In particular, modifying the variables that influence intention is a key component of this study. A comparison of how attitudes, subjective or social norms, and perceived behavioral control operating under a promotion or prevention prime was the main theoretical objective of this study. The Theory of Planned Behavior and the Theory of self -regulatory focus largely operate under a different set of circumstances. The Theory of Planned Behavior seeks to understand personal beliefs that lead to certain behaviors, while the Theory of Self-Regulatory Focus is more about how individuals process, perceive and act upon information. However, this study could shed light on the ways in which they maybe inter-connected. This could ideally lead to a better understanding of the various ways in which human behavior functions. Such findings could have positive implications for policy makers, researchers, or private sector marketing.

CHAPTER II: LITERATURE REVIEW

The goal of this literature review is to conceptualize the various theories and ideas that will be used throughout this study. Literature from the Theory of Planned Behavior, and the Theory of Self-Regulatory Focus was used to generate the variables used in this study. First the Theory of Planned Behavior is explained as a conceptual framework for variables concerning attitudes, social norms, and perceived behavioral controls. The role that these variables play in behavior and behavioral intention will be thoroughly explored in order to provide a framework for the research. Next, literature about how to apply the variables from the Theory of Planned Behavior directly to environmental issues will be discussed. Attitudes about water conservation are explored, with particular attention paid to environmental concern about water as a main environmental variable that determines behavioral intention. Then, environmental social norms are looked at, with a focus on how people view the broader social perceptions about environmental issues, and how the injunctive and personal norms affect behavior. The following section examines the effects of perceived behavioral control on environmental behaviors, and how much those perceptions are a reality. Once the variables have been conceptualized, the Theory of Self-Regulatory Focus will be introduced. The Theory of Self-Regulatory Focus, which essentially states that individuals process information with the goal of maximizing gains, or minimizing losses, is used to modify the various elements of the Theory of Planned Behavior. The main ideas, applications, and results of studies concerning this theory will be discussed, with particular attention paid to concepts of promotion and prevention focus. It is proposed that this theory has significant implications for the traditional variables of the Theory of Planned Behavior, and

could be of particular concern for understanding environmental behavior. As such, the effects of self-regulatory focus on each variable will be discussed, as well as a theoretical justification for why the effects are expected to occur. A summary of the literature, as well as hypotheses are presented at the end of this discussion.

The Theory of Planned Behavior

The foundation of this study is centered on the well-known Theory of Planned Behavior. This theory has served as a key for understanding human behavior and behavioral intentions. It is a cornerstone of behavioral, psychological, and social research. As such understanding this theory is critical for the purpose of this study. Very few models of behavior in the social sciences have had as much success as Ajzen's Theory of Planned Behavior. This theory was one of the first to view behavior as more than just an aggregate of personality traits and beliefs. The Theory of Planned Behavior is fundamentally based off the earlier theory of reasoned action, which states that behavior is directly resulted from intentions to perform that behavior (Madden and Ellen 1992). In this theory, intentions are a result of the sum of all attitudes and subjective normative beliefs about the target behavior. The theory of reasoned action has proved fairly effective in predicting intention and behavior. Still, it lacked certain versatility in what it could explain. As such Ajzen proposed the expansion of the theory of reason action. In its basic form, the Theory of Planned Behavior states the same basic ideas, namely that intention to perform a behavior is a result of personal attitudes, and the subjective normative. However, the Theory of Planned Behavior takes into account a variety of factors that are unique to a certain situations which the theory of reasoned action largely leaves out. The subject's perceived behavioral controls with regards to the target behavior play a fairly large

role in their intention. Generally speaking, the Theory of Planned Behavior can be stated as the following, "Intention to perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; and these intentions, together with perceptions of behavioral control, account for considerable variance in actual behavior (Ajzen 1985)." The Theory of Planned Behavior, and the interactions of its main variables are represented graphically below.

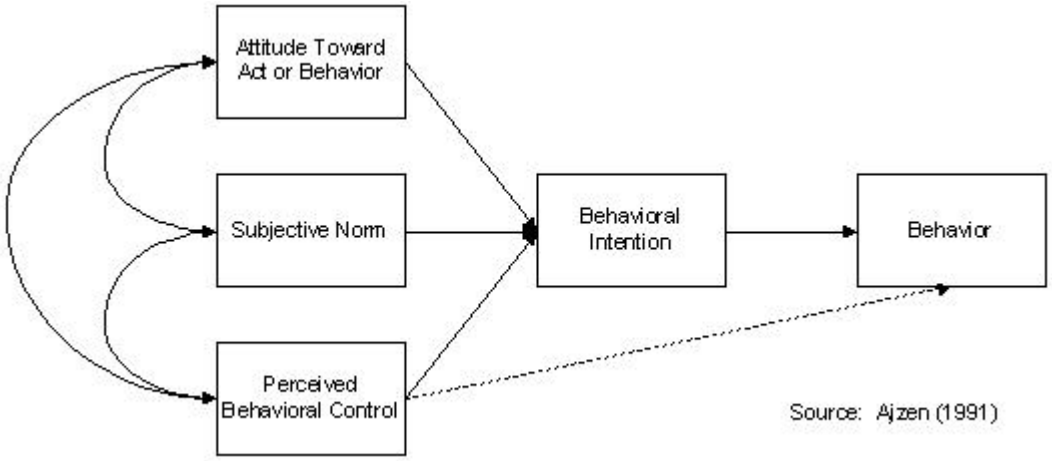

Figure 1. Theory of Planned Behavior

The following few paragraphs will discuss each variable in detail, and how those variables are related to overall behavioral intention.

Theory of Planned Behavior: Attitude

Attitude is perhaps the most fundamental aspect of the Theory of Planned Behavior. Social scientists have been studying the effect of people's attitudes on behavior for as long as the discipline has been around (Manicas 1987). Most

researches take a cognitive information processing approach to attitude formation. This means rather than simply reacting to stimuli, human beings process, evaluate, and conceptualize their external reality. In the process of doing so, people form attitudes about certain behaviors and experience. In their most general form, attitudes can be thought of as the sum of beliefs (b) about a target object or behavior, multiplied by the subjective evaluation (e) of the belief's attribute.

$$A \propto \sum_{i=1}^{n} b_i e_i$$

Source: Azjen 1991

In this equation, beliefs are defined as what a person believes to be true about an object, event, or behavior. For simplicity, anything that can have an attitude formed about it can be called a concept. Take for example an individual who is in the process of forming an attitude about global warming. They have a set of beliefs about the concept that they must determine to be true or false. For example, they believe that global warming will lead to increasing temperatures, rising sea levels, and droughts. However, a belief on its own is merely information that is perceived to be true or false. Beliefs must be evaluated in order to become meaningful, and form an attitude about the larger concept (Eagly 1993). Evaluations are subjective, and give the belief a positive or negative emotional quality. For example, assume the individual in question evaluates each belief about global warming to be negative. The Theory of Planned Behavior would sum these negative evaluations about the beliefs of global warming together, and would result in a negative attitude towards global warming. However, it's very difficult for an individual to actually evaluate every one of their

beliefs about some concept when forming an attitude. That's why the attitude component of the Theory of Planned Behavior only takes into account salient beliefs. These are the limited number of beliefs that are actually being evaluated at any given point of time with regards to some concept. As such researchers are only able to obtain an estimate of some theoretical attitude that is the true sum of all beliefs and evaluations. Whether or not this true attitude even exists is up for debate, and is beyond the scope of this paper. Regardless, researchers have been able to predict attitudes fairly consistently using the method described above (Fishbein and Ajzen 1975).

Theory of Planned Behavior: Subjective Norms

The subjective norm can be thought of as the social pressure people feel to perform one behavior or another. They represent the influence that peers, family members, and significant others have on someone's behavior. Normative beliefs are usually generated collectively by a society, and reinforced through an individual's interactions with important referent people. Referent people express their expectations that an individual behave in a certain way. These types of interactions are very obvious in child parent relationships, but occur at every level of society, such as the workplace, school, and social circles (Ajzen 1985). The subjective norm is represented in a very similar way as attitude. It is calculated as the sum of the strength of each normative belief (n), multiplied by the person's motivation to comply (m) with the referent in question.

$$SN \propto \sum_{i=1}^{n} n_i m_i.$$

Source: Azjen 1991

While the subjective norm tends to increase the predictive power of the Theory of Planned Behavior, Ajzen 1991 noted that at times the "motivation to comply" element did not correlate with behavioral intention. One explanation for this is that subjective norms vary considerably from population to population. Certain cultures place a lot of importance on the opinions and thoughts of family members when considering a certain behavior. Other groups, for example counter culture teenagers, may have very little motivation to comply with referent people. Groups such as these may actual exhibit an inverse relationship between motivation to comply and intention. As such it's important to consider cultural uniformity or diversity when selecting samples if researchers want to exhibit the actual effect of the subjective normative. Many researchers expand the subjective norm to include the injunctive or social norms in order to create a broader variable (Kandori 1992). Still, the inclusion of some kind of normative beliefs into the Theory of Planned Behavior is critical for accurately predicting intentions to perform certain behaviors.

Theory of Planned Behavior: Perceived Behavioral Control

The performance of a behavior is at least partly influenced by non-motivational factors. Things such as amount of time, money, and cooperation of others are all examples of factors that are external to the subject. These factors represent the "reality" of the situation. They can only be changed through the subject's direct interaction with the external environment. Therefore, certain

behaviors demand the recognition of certain outside controls (Sparks and Paul 1997). Take for example someone who wants to acquire a high end sports car. A person's desire for a sports car can be determined by any number of attitudinal or subjective normative beliefs. In fact they may intend to acquire this car with 100% conviction. However, there are some actual behavioral controls that must be taken into consideration. Assuming the person in question lives in the U.S, there are only so many ways to acquire the sports car. The person can purchase it, steal it, have it given to them, or somehow manufacture it. Yet the actual behavioral controls of the situation guide the person's behavior towards purchasing the car. Purchasing the car appears to be the most rational option. The viability of the other three options is considerably restricted by the external environment. In contrast to actual behavioral controls there are perceived behavioral controls (PBC). PBCs are a person perception of the limitations imposed on them by external factors. These limitations may or may not be actual behavioral controls. An individual's level of perceived behavioral control can be thought of as a person's perception of the ease or difficulty of performing the behavior of interests. Generally, the higher the subjects perceived behavioral control, the more likely it is that they will follow through with their intention to perform a certain behavior. A lower perceived behavioral control usually means that an individual is unlikely to follow through with their intention. The degree of an individual of perceived behavioral control can also be very distant from actual behavioral controls, or closely match reality (Notani and Sahni 1998). The following situation helps convey the different elements of PBC at work. Take for example someone who wants to become a star athlete. They may have very positive attitudes towards their sport, and experience little to no negative influences from subjective norms. However, they may feel that they are too slow, or that they are not big enough

to succeed in the sport. These are external factors that are apparently outside the subject's control, and are perceived as being actual behavioral controls. In reality these factors might only be limited barriers to success, and could easily be overcome with training and effort. A person with a higher perceived behavioral control might not even see the same factors as barriers at all. Therefore, it's the subject's perception of those external factors that is the real behavioral control, and not so much the factors themselves. However, if the same person who wants to become a star athlete turns out to be 80 years old, then there are some actual behavioral controls that must be taken into account. In this situation, an 80 year old with high-perceived behavioral control about overcoming size and speed barriers may have unrealistic expectations. If this were the case, most people would agree that a lower perceived behavioral control would be more accurate with respects to some objective reality about actual behavioral controls. Ultimately, the inclusion of perceived behavioral controls is what makes the Theory of Planned Behavior an improvement over the theory of reason action. The inclusion of perceived behavioral controls allows for researchers to take into account the substantial role that the external environment plays on an individual's actions. Perceived behavioral control is calculated in a similar as attitude and the subjective normative, with c being a control belief, and (p) being the perceived power of that belief. The sum of every perceived behavioral control belief, multiplied be their respective perceived power, gives the variable perceived behavioral control.

$$\mathrm{PBC} \propto \sum_{i=1}^{n} c_i p_i$$

Source: Azjen 1991

Theory of Planned Behavior: Variable Interactions

While each variable of the Theory of Planned Behavior contributes significantly to the prediction of behavioral intention, and therefore actual behavior, they also exhibit various feedback loops and interactions with each other (Armitage and Conner 2001). In Ajzen's model of the Theory of Planned Behavior, attitude toward the behavior, subjective norm, and perceived behavioral control are all shown to affect and be affected by each other. Take for example attitude toward the behavior. Attitudes about a certain behavior are affected by the subjective normative pressure of referent people, and perceived behavioral controls. Pressure from important referent people could cause the subject to have more positive or negative attitudes towards the behavior. On the other hand, positive or negative attitudes from the subject about a behavior could also cause important referent people to reinforce more positive or negative normative beliefs, and therefore increase or decrease normative pressures on the subject. Attitudes also exhibit the same kind of relationship with perceived behavioral controls. A higher or lower level of perceived behavioral control should in general have an effect on a person’s attitudes towards a behavior. The inverse should also hold true. More positive or negative attitudes should also increase or decrease perceived behavioral controls. Finally, the subjective norm influences, and is influenced by both attitudes and perceived behavioral controls. For example, negative subjective norms about the subject performing a behavior could result in the subject having a low perceived behavioral control. They may be discouraged by disapproving referent people, which could cause them to perceive more behavioral controls than there really are. As stated before, the subjective norm interacts with attitudes, potentially causing the subject to reevaluate their beliefs and attitudes about a behavior. Ultimately, variable interactions appear to be very subject specific, drawing

on a number of psychological environmental factors that may not be accounted for in a limited study. Variable interactions are also very situation specific, with some interactions observed to be stronger with regards to the particular behavior. Overall, these interactions are an important factor to consider when using the Theory of Planned Behavior, but are not crucial to the basic function of predicting behavioral intention.

Environmental Attitudes and Water Conservation

This study will use various theories about environmental attitudes in order to create a Theory of Planned Behavior attitude variable that accurately measures individual's perceptions about water conservation. Of particular importance to the development of this variable is the New Environmental Paradigm, which uses a series of consistent Likert-type scales to measure attitudes about the environment. Researchers have found that these items revealed the existence of a solid world view about humanities effects on the natural world. According to the paradigm, people's interactions with the natural environment constitute a core aspect of human experience and identity. Items on the NEP seek to identify peoples "primitive beliefs" about human interactions with the natural world. These "primitive beliefs" are thought to represent a person's conception of the basic truths about physical reality. As such, the measurement and understanding of such foundational beliefs are thought to have a strong predictive power with regards to people's attitudes towards specific environmental behaviors. (Dunlap 1978). More recently the NEP has been revised to account for the shifting social perspectives about the environment, and the changing nature of environmental issues (Dunlap and Liere 2000).

A lot of the more recent literature has focused on how these general environmental concern and attitudes could predict behavioral intentions, and even actual behaviors. Questions have typically been expressed in ways that capture very macro perspectives, such as "Damaging the natural environment is bad for future generations" (Poortinga and Velk 2004). One issue with these broad general attitude questions is that they often times are not very consistent in what they measure. In the past, researchers have had some difficulty in accurately measuring attitudes. As such, the results of these earlier studies have been significant in some areas, but not so in others. For example, Ellen and Wiener 1999 found that a general attitude toward improving the environment was a significant predictor of purchasing environmentally safe products, recycling, and outdoor recreation. These types of questions have then been linked to certain behaviors such as recycling, use of public transportation, or purchase of environmentally friendly products.

Still, a tentative link between broad environmental concern and pro-environmental behavior remains elusive. "The general consensus in the environmental literature is that the value of general [positive environmental] dispositions, and attitudinal measures is mixed when applied...to the prediction of specific environmentally responsible behaviors" (Cleveland 2005). Attitudinal variables that predict certain types of environmental behavior, for example recycling, might not be good predictors of another type of environmental behavior, such as water conservation. This means that certain "distinct aspects of environmental concern may interact to differentially influence specific behaviors (Peattie 2005)." This same kind of result was found with researchers sought to use general environmental dispositions found on the basic NEP scale to predict water conservation. Corral-Verdugo and Bechtel 2003 found a slight correlation between higher NEP scales and concerns

about water conservation, but the higher NEP scores only accounted for 7% of the variance in intention to conserve water. Ultimately, there does not appear to be a single set of beliefs or attitudes about the environment that can consistently predict pro-environmental behaviors throughout a variety of consumer behavior. One explanation for this is "the complexity and potentially multifaceted nature of environmental concern, in that the degree of concern may be more predictive of some behaviors than others" (Cleveland 2005).

However, people's attitudes about specific environmental behaviors are much better predictors of intention to perform that behavior. More broadly, if someone has a favorable attitudes towards a certain topic, they are much more likely to perform behaviors related to that topic. For example, many studies have shown that people who think that recycling is a good idea, or that it helps the environment, are more likely to recycle (Schultz and Oskamp 1996). Other studies have shown results along the same line of reasoning, but for different situations. A study by Arvola done in 1998 showed that people who feel that food grown with pesticides is dangerous were more likely to buy organic. Still, the consumption of one type of green product does not always imply the consumption of other green products. While the results of both of these studies are fairly intuitive, researchers would be hard pressed to find a common and reliable variable that accurately predicts both of these types of environmental behavior. As such this study will focus on specific attitudes regarding water conservation and behavior, and avoid trying to use broad environmental concern as a predicting factor.

Studies concerning attitudes towards water conservation have primarily focused on people's perceptions about the scarcity of water, and the environmental impact that excessive water usage creates. Attitudes towards water conservation were

found to vary depending on people's beliefs about their water resource, as well as exposure to information. Trumbo and O'keefe 2011 found that pro-conservation attitudes were affected by a regions geographic location, whether or not they were declared in a drought and public information campaigns by local governments. Participants from three different communities expressed a spectrum of concern about water conservation and behavioral intention based on these variables. These specific beliefs and attitudes about water conservation were found to have a significant effect on intention. This result was also found in a study conducted in rural Mexico by Corral-Verdugo and Betchel 2002. The researchers compared the results of the intention to conserve water between general environmental attitudes, and specific attitudes about water conservation. The researchers found high significance with the specific water conservation attitudes, especially with regards to perceptions about how wasting water could harm future generations. Other studies have found even better results by increase the specificity of the water conservation attitude they measure. A study by Willis and Stewart 2011 were able to measure attitudes about water conservation about a specific behavior. For example, they used items to measure attitudes about how taking shorter showers could help save water, and therefore help the environment. Other items measured people's attitudes towards behaviors such as watering their lawn during the day, or leaving a faucet running. Water conservation attitudes with regards to these actions showed strong significance in predicting behavioral intention. For example, people who felt that taking long showers wasted water expressed an intention to take shorter showers. People who felt leaving a faucet running while they brushed their teeth was wasteful, expressed intention to not leave the faucet running. Ultimately, for the purpose of this study, the water conservation attitudes variable will seek to measure a mix of broad water

conservation beliefs, as well as beliefs about the effectiveness of specific water conservation behaviors.

Environmental Social Norms

While the subjective normative in the Theory of Planned Behavior mainly focuses on the role of important referent people in reinforcing norms, environmental literature has mostly focused on social and personal norms. However, social and personal norms in environmental literature appear capable of fitting into the role of the subjective norm in the Theory of Planned Behavior. Researchers generally agree that people's perception of what the broader society views as important issues makes a noticeable impact on behavior. Furthermore, various studies have shown that social and personal norm can take the role of the subjective norm, and actual add predictive power to the Theory of Planned Behavior (Parker 1995). First, a brief compare and contrast of social, personal, and subjective norms is needed in order understand how this variable could function for the purpose of this study.

Social norms have evolved to regulate social life. They guide and direct individuals behavior in a society without using the force of laws, and instead rely on an individual's experiencing judgment or expulsion from the larger group they are a part of (Cialdini and Trost 1998). Indeed, most laws are also social norms. Stealing not only comes with a legal penalty, but it will also result in sever social sanctions because most groups of society view theft as immoral. As such social norms have immense pressure on individual's lives. In fact the subjective norm as described in the Theory of Planned Behavior is more often than not a micro manifestation of more overreaching social norms. Important referent people in a subject's life often express disapproval or approval of actions in ways that are consistent with the overall norms

and values of society (Kandori 1992). In reality, the relationship could be seen to flow both ways. Social norms could be viewed as generating the subjective normative, or the collection of subjective normative experiences in a society could be seen as creating the social norms. Regardless of the direction of the relationship, social norms do a few things differently than the subjective normative. Individuals can experience strong social norms through mechanisms other than referent people (Biel and Thogersen 2005). Advertising, media, minor social interactions, and other factors all convey the social norms of a society. Therefore, an individual can experiencing a strong social norm towards a behavior, even though referent people might not share that same norm. Personal norms are the result of the internalization of social norms or the subjective normative. Individuals with strong personal norms will develop feelings of guilt for violating social norms, or feelings of pride when they comply social norms (Schwartz & Howard 1982). The same thing occurs with the subjective normative. Individuals can feel pride or guilt for complying or not complying with the norms of important referent people. However, it's possible for individuals to create personal norms from mechanisms other than social norms. Individuals can create a sense of morality that is not dependent on the larger group they're a part of. Given the complexity of personal norms, this study will only focus on augmenting the subjective normative of the Theory of Planned Behavior with social norms.

There is plenty of evidence reflecting the importance of social norms with regards to environmental behavior. A lot of the literature has particular relevance to water conservation, which provides justification for the use of an environmental social norm for the purpose of this study. As with attitudes, specificity in social norms in general provides more predictive power about a subject's behavior than norms about general environmental concerns. Although there were several studies used to help

identify the role of social norms in water conservation, one study in particular exemplifies well all the theories that will be drawn upon. A study done by Goldstein and Cialdini in 2008 concerning the reuse of towels as a means of water conservation yielded very supportive results about the effectiveness of social norms in modifying behavior. Researchers used different towel door hangers conveying the importance of water conservation on the health of the environment. One hanger had a message that mainly talked about the responsibility of individuals to help save the environment, and how every little action can help make a difference. The other hanger declared that reusing towels was a social norm, and that the majority of guests did so in order to promote water conservation. It ended with a statement about how guests can join the effort to make a difference for the environment. The researchers found that the message about individual responsibility saw a 35% participation rate, while the message environmental social norms saw a participation rate of 44%. A few explanations were presented to explain these findings. For one, social norm adherence is very much dependent upon the level of participation that people perceive. This factor maybe the most important in this study, because it fits the type of message framing used. This theory states that if individuals perceive everyone else performing a certain behavior, there is an increasing likelihood that they will feel social pressure to also perform that behavior (Burnkrant and Cousinea 1975). They may feel a sense of urgency not to miss out on something important, or that if they don't also perform that particular behavior, they may lose status with the group. Another explanation for the significant effect of social norms is the theory that individuals are more likely to follow the behavior of people that share similar characteristics with them (Cialdini and Robert 2006). In the case of the towel study, everyone staying at the hotel was sharing a similar experience of being a guest. Furthermore, the specificity of the

action allowed individuals to easily perceive the similarities between them and other guests. As such this study will seek to create a variable to measures the traditional subjective normative, as well as the social norms that participants may feel about water conservation. Questions in this study will be specifically about water conservation efforts, but avoid narrowing into certain behaviors so that a broader social norm about water conservation may be captured.

Perceived Behavioral Control and Environmental Action

Applying perceived behavioral control (PBC) to environmental issues has been a fairly straight forward process. Measuring environmental PBC has been done with considerable accuracy in a number of studies. While the PBC is easily applied to a wide range of behaviors, there are special cases that can make certain factors of PBC more relevant. This is the same kind of refining that was done with social norms and attitudes. These modifications to the PBC don't alter the function of the variable in any appreciable way; they only focus it in to be more situational specific. Therefore, this study will attempt to measure environmental PBC through a typical assessment of PBC as laid out by the Theory of Planned Behavior, as well as a special case of the PBC called perceived consumer effectiveness. These variables should accurately measure a participant's PBC with regards to water conservation behavior.

For example, a study done by Lam in 1999 found that perceived behavioral control was often times the most dominant factor in determining the installation of water saving appliances. Many participants had very favorable attitudes towards such tech, as did their immediate social group. However, they reported a very low PCB. Participants felt that factors such as being a renter, or not having enough upfront capital, where major deterrents towards adoption of water conservation tech (Lam

1999). However, when it came to more “soft” efforts towards water conservation, such as using less water around the home, respondents had a much higher perceived behavioral control. This same kind finding was also reported in a study over agricultural technology adoption when looked at through the lens of the Theory of Planned Behavior. Researchers found that in general, adoption of new water conservation technologies was met with low perceived behavioral control (Lynee 1995). Participants primarily cited economic concerns as something that was out of their control. Another strong PBC factor was how much modifications in behavior would affect workloads. Farmers who thought that water conservation efforts would disrupt their work operations often cited this as a prohibitive factor. Farmers had much higher PBC in relation to simple behaviors that could conserve water, such as doing the majority of watering at night. Their PBC was also much higher whenever there was low upfront cost for certain water conservation tech, and a higher return on investment. Despite reporting low PBC towards water conservation, most farmers reported favorable attitudes about water conservation tech, and predicted no negative social normative consequences of such adoption. They generally felt that water conservation was a good thing as long as it didn't increase the difficulty of performing their work.

Another factor surrounding perceived behavior control and environmental behavior is centered on the concept of perceived consumer effectiveness (PCE). “PCE is related to the concept of perceived behavioral control, which has been studied by theorists in the areas of learned helplessness, locus of control, and perceived control (Ellen and Wiener 1991).” Higher or low PCE can significantly affect behavioral outcomes, even when attitudes and social norms surrounding the environmental behavior are very favorable. Several specific behaviors have been study, which give

very strong evidence for how PCE affects PBC. For example, more energy was used by households who thought that individuals were not responsible for energy shortages, and that such problems could not be solved by individual efforts (Seligman 1979). These households had a low perceived consumer effectiveness, which translated into low perceived behavioral control that restricted their performance of conservation behavior. On the other hand, individuals who had high perceived consumer effectiveness were more likely to purchase environmentally friendly products, and to perform behaviors such as recycling and conservation. These trends reflect that such individuals have a high amount of perceived behavioral control. They viewed their actions as not only making a difference, but also felt capable of performing them.

Given the trends in PBC, and PCE with regards to water conservation, this study will seek to measure the same factors in a similar way. First, questions will focus on how easy or hard participants feel that water conservation is. These questions will focus on how disruptive adoption of tech is, economic barriers, and whether or not they feel like feel capable of taking other non-technical actions to conserve water. The second part of this variable will attempt to measure perceived consumer effectiveness. These questions will assess how much participants think that their actions make a difference to solving the larger issue. These questions should also measure how much individuals feel that it's their responsibility to contribute to water conservation efforts.

Theory of Self-Regulatory Focus: Introduction

The Theory of Self-Regulatory was first proposed by E. Tory Higgins in 1997 (Higgins 1997). This theory forms the basis for a core set of independent variables

that will be used throughout this study. Essentially, the Theory of Self-Regulatory Focus is a model of how individual's process and act upon information in order to accomplish their intended goals or reach a desired end state. The theory proposes that there are two fundamental strategies for achieving end states, namely a prevention focus, and a promotion focus. However, before these are explored more thoroughly, it's important to understand where the Theory of Self-Regulatory Focus gets its foundation from.

At its core, the Theory of Self-Regulatory Focus is based off the hedonic principle. The hedonic principle is more broadly a theory of wellbeing. It states that human experience is one where people seek pleasure and avoid pain. In this view, human wellbeing is defined as an enduring and lasting state of happiness, or pleasure. The hedonic view has its roots as far back as ancient Greek philosophy. Aristippus declared in the 4th century B.C.E that the goal of life is to experience the maximum amount of pleasure, and that happiness is the totality of one's hedonic moments (Ryan and Deci 2001). Essentially, the hedonic principle declares that pleasure is created from the fulfillment of a series of personal preferences for particular situations or outcomes within a set of time. Other philosophers have extended the hedonic principle to state that pleasure can also be derived from that attainment of goals or valued outcomes in a degree of personal realms (Diener 1998). Many behavioral scientists have concluded that pain avoidance and goal attainment is the main mechanism by which the hedonic principle functions (Ryan 2001). But according to Higgins, the hedonic principle is not quite as linear as many theories and researchers assume it to be. In reality individuals can generate the end result of approaching pleasure and avoiding pain in several very different ways. For example, Higgins and other researchers attest the hedonic principle should function differently for people

trying to satisfy a basic need for survival, such as eating, and for people working towards a more esoteric goal, such as intellectual growth (Ryan 2001). Each of these situations would require a very a different set of actions and goals. Higgins declares that looking at the hedonic principle through the RFT provides a more holistic view on how people actually act on their motivations. Essentially, RFT is concerned with the strategies people use to approach pleasure and avoid pain. RFT breaks these strategies down into two broad categories. Individuals can approach their desired end states with a prevention focus, or a promotion focus. Through these strategies, individuals will typically regulate their behavior in a way that fits the certain characteristics consistent with each focus.

Regulatory Focus: Promotion and Prevention

While both promotion and prevention focus is concerned with accomplishing a desired outcome, they approach how to accomplish their goals very differently. This holds true even if both regulatory focus have the same goal. In this situation they will typically have very different strategies for accomplishing the same thing. In general, a promotion focused approach is concerned with achieving positive outcomes. They experience negative outcomes whenever they are denied the presence of positive outcomes. This primarily due to the fact that individuals experiencing a promotion focus have an enhanced accessibility to their wishes, aspirations, hopes, or ideals. These kinds of motivational forces are more salient during a promotion focus. In general, a regulatory focus of promotion is primarily concerned with pursuing goals that will fulfill these fundamental motivations about what would lead to maximum happiness. As such a promotion focus will view information in terms of how certain actions can further advancement, growth, and accomplishment. By extension, a

promotion focus also views positive outcomes in terms of gains, and negative outcomes in terms of non-gains. Put another way, this means that individuals with a promotion focus think about outcomes in terms of the amount benefit, or in terms of missed opportunities. These fundamental aspects of promotion focus have several interesting implications for a number of situations.

A prevention focus regulatory framework is the inverse of a promotion focus. With a prevention focus, individuals experience the pleasure of the absence of negative outcomes, and experience the pain of the presence of negative outcomes. Essentially a prevention focus is centered on an individual's duties, obligations and responsibilities. These elements of a prevention focus are typically expressed as a need for security and assurance. Outcomes are typically framed as non-losses as a positive outcome, and losses as a negative outcome. In a prevention framework, the reward is the absence of some kind undesirable outcome. As such a prevention regulatory focus is mainly concerned with security, safety, and responsibility. The motivational forces behind a prevention focus are more broadly thought of as ought's. They represent things that people feel like they ought to do for several reasons relating to duties, obligations, and so on. As such individuals operating from a prevention focus tend to process information in a way that seeks to minimize potential losses and dangers.

Higgins declares that promotion and prevention strategies actually have their origins in childhood, and are well represented in childhood caretaker interactions. As stated earlier, a promotion focused approach is concerned with achieving positive outcomes. Children who seek to receive praise or attention for doing something well is operating from a promotion focused approach. They are striving to live up to some ideal behavior that will allow them to receive the most pleasure from any given

situation. They experience negative outcomes whenever they are denied the presence of positive outcomes. For example, a child who throws their food instead of eating it may have their meal taken away. They are being denied the positive outcome of finishing their meal, which may have included praise as well as a full stomach (Higgins 1997). A prevention focus can be seen as function in roughly the same way. Using the child-caretaker analogy, a child may be told repeatedly to mind their manners. If they act up they are punished in some negative way, such as being yelled at for being rude. However, if they follow the rules, then they are not punished, and instead are reassured that they are being responsible. Take for example a child who is constantly told to wear their pads when riding their back. If they child wears their pads and they fall, they will not get hurt. They experience the pleasure of the absence of an injury. However, if they don't wear their pads and they do fall, they experience the negative outcome of an injury

Regulatory Focus: Chronic or Induced

A person's regulatory focus is not necessarily a static like a personality trait. Regulatory focus can be either chronic or induced. A chronic regulatory focus is an individual's default regulatory focus. They will typically process information in either a promotion or a prevention frame. A person with a chronic prevention focus will process most information encountered on a daily basis in a way that is consistent with the various elements of prevention. The same is true of a chronic promotion focused individual. Researchers theorize that a person's chronic regulatory focus is determined by childhood socialization experiences (Haws and Dholakia 2010). Essentially, chronic regulatory focus reflects an individual's enduring concerns about how to be successful in the world. It represents a set of go to strategies that individuals believe

will help them best accomplish their goals. However, it's important to note that regulatory focus is not a one-dimensional bipolar spectrum (Higgins 1997). Both promotion and prevention focused systems co-exist independently from each other. An individual still has access to the entirety of both regulatory focus strategies, but their chronic regulatory focus is what they tend automatically use for information processing.

The fact that everyone has access to both regulatory focus strategies, means that regulatory focus can be induced fairly easily. Researchers often use simple priming events in order to place people into certain regulatory focus groups without having to know their chronic regulatory focus (Higgins 1998). Priming uses certain techniques that access the fundamental root of each regulatory focus. For prevention focus priming, strategies focus on assessing an individual's duties, obligations, and responsibilities. Most often, participants are simply asked to write down these duties and obligations. This task makes peoples duties and obligations salient, and causes them to think about various ways that they uphold these responsibilities. A regulatory check is often used, such as asking participants how they might feel if they couldn't uphold their responsibilities. For a promotion focus, priming can happen in the same general way. Participants are asked to write down their hopes, dreams, and wishes. Doing so causes individuals to think about ways in which they could achieve these goals, which lends them to a promotion focus. A check is also used in a similar way as prevention, by simply asking participants how the accomplishment of their goals would feel.

While priming is an easy way to artificially induce a particular regulatory focus at a given time, a person's regulatory focus can also be induced by various environmental factors. For example, people who find themselves in high risk or

dangerous situations will almost always use a prevention focus. A study by Hmieleski and Baron 2008 found that business leaders in an environment characterized by risk avoidance were found to lean towards prevention focus. These were typically large and stable firms that were seeking to maintain status. Simply being in such a situation was enough to induce a regulatory focus. However, a promotion focus can be just as easily induced in an individual whenever they are a part of a high reward situation. The same study also found that business leaders operating in an environment of uncertainty and high return, such a as technology startups, where much more likely to be promotion focused. In this context, it is much more beneficial to be promotion focused because the rewards seem much greater than the risk. In general, the situational context of regulatory focus shows the dynamic nature of the theory, and the wide variety of situations it can be applied to. The fact that regulatory focus can be induced is of critical importance to this study. The survey will use a typical priming event as described above in order to induce a desired regulatory focus, which will allow for the examination of any effects of the Theory of Planned Behavior variables.

Regulatory Focus: Persuasion

Regulatory focus lends itself to priming fairly easily, which means that the theory is particularly useful for persuasion. Various researchers have had a lot of success with increasing advertisements effectiveness and message salience through the use of RFT. Message, products, and information in general can be designed to appeal to a particular regulatory focus. The key is how the information lines up with the desired end states of each regulatory focus. While each individual has a particularly regulatory focus, messages and information can also be framed in a

particular regulatory focus. When an individual's regulatory focus lines up with a message that is framed in the same type of focus, the result is an increase in the persuasiveness of the message. This process is called regulatory fit, and has been shown to be very effective at increasing message appeal (Lee and Anker 2004). The strategies differ for both regulatory focus, but in general messages should work towards appealing the fundamental aspects of each regulatory focus. Individuals acting from a promotion or prevention mindset will find messages more appealing if the content of the message exhibits regulatory fit (Lee and Aker 2004). Regulatory fit draws from the basic gain/loss relationships unique to each regulatory focus. The basic dynamic states that gain framed messages are more appealing to a promotion focus, while loss-avoidance framed messages are more appealing to a prevention focus. For a promotion focus, a message that implies the chance of a gain fulfills appeals to the underlying mechanisms of promotion. These kinds of messages represent the chance for growth and fulfillment, which is at the core of a promotion focus. For a prevention focus, messages that are framed as loss avoidance appeal to the prevention tendency to express gain as the absence of a negative outcome. An example of these dynamics is presented very well in the study by Lee and Aker 2004. In this study participants were asked to review some mock advertisements for grape juice. Participants were placed in either a promotion or a prevention group. A regulatory focus was induced by a tag line before each advertisement that expressed a promotion or prevention focus attitude for the participants. Afterwards, a 2 x 2 study was conducted where participants were presented with a message that fit their particularly regulatory focus, and a message that did not fit their regulatory focus. The promotion message focused on the energy and health gains of grape juice, while the prevention message focused on how grape juice lowers the risk of cardiovascular

disease. As expected, promotion focus individuals found the message the emphasized the energy and health gains of grape juice more appealing. Prevention focused individuals found the message that emphasized cardiovascular disease prevention more appealing. This application of RFT could provide some interesting findings for the purpose of this study. If water conservation is found to be a predominantly promotion or prevention focused issue, then policy makers could design information campaigns that appeal to that dominant focus.

Regulatory Focus: Other Findings

As stated before, each regulatory framework is associated with a number of different techniques and strategies for accomplishing the same overall goal of approaching a positive desirable end state. Both promotion and prevention foci have unique implications for the ways in which individuals process and act upon certain information. A study by Florack and Friese 2010, reported that promotion focused individuals typically processed information in a more risky and eager way than a prevention focus. This was theorized to be true because the activation of a promotion focus implies that the environment is safe, and that it is okay to take risks and try new things. In this framework, individuals are trying to achieve as much of a gain as possible, therefore their strategy is to process as much information as quickly as they can. Their goal is to find the information that allows them to have a maximum gain. In general, promotion focused individuals prefer speed over accuracy in completion of a task (Lee and Aaker 2004).

One implication of this is that promotion focused individuals are more likely to rely on implicit preferences than prevention focused. The rapid information processing of a promotion focus means that they'll depend on immediate “gut”

reactions to determine if certain information is important or beneficial. On the other hand, a prevention focused frameworks are associated with vigilant information processing. Individuals operating from this perspective will analysis and scrutinize incoming information for accuracy. This is because they are focused on preventing errors of commission, or acting upon false information. Individuals with a prevention focus have slower information process, and will make decisions on what's in their best interest after carefully processing the information.

What these preferences ultimately result in is that prevention focused individuals are more sensitive to the potential risks of a new product than promotion focused individuals. This finding is in line with the concept that prevention focus views information in terms of non-losses as a positive outcome, or losses as a negative outcome. Replacing an existing product with a new one doesn't typically create a non-loss outcome, particularly if the current product being used is already functioning as intended. As such, people with a prevention focus will also typically prefer the status quo over a new product, because for them the status quo has less risk (Chernev 2004). Use of a new product represents a risk that it will not perform up to par with the status quo. However, promotion focused individuals have often been observed to often chose a new product over a previous choice, because they see it as a chance to receive a gain, and not necessarily as choice that carries a lot of risk. For them the new product is an opportunity to have an even greater gain than before. Indeed, many studies have shown that promotion and prevention focus have inherently different risk profiles (Gino 2011). In general, prevention focus individuals are much more sensitive to risk over a broad variety of behaviors than promotion focus.

Linking the Theory of Planned Behavior and Regulatory Focus

In theory, the hedonic principle should play a role in the basic function of the Theory of Self-Regulatory Focus, and the Theory of Planned Behavior. The core principle that individuals approach pleasure and avoid pain holds true in both of these theories.

In the Theory of Planned Behavior, individual's intentions to perform a certain behavior represent the sum of a number of positive and negative evaluations about the various variables that pertain to their situation. Ultimately, their decision to perform a certain behavior or not is based on how much positive or negative outcomes that the performance the behavior will result in. The central reason that someone performs a certain behavior is because performing it would result in a favorable outcome. The inverse is also true. The central reason that someone does not perform a behavior is because they view the performance of the behavior as resulting in an unfavorable outcome. What is favorable or unfavorable can easily be thought of in terms of what is pleasurable or painful. As a result, an individual's evaluations of the variables in the Theory of Planned Behavior can more or less be thought of as an individual's subjective assessment of which course of action will be the most pleasurable or painful.

Regulatory focus theory operates on the same principle, perhaps even more so than Theory of Planned Behavior. Tory Higgins declares that this theory is based directly on the hedonic principle, and that it is a model for understanding approach versus avoidance mechanisms. According the Higgins, the hedonic principle explains why people are motivated towards pleasure seeking actions, but does not broadly explain how it happens. Regulatory focus theory seeks to generally explain the various strategies that individuals use to fulfill the hedonic principle. It mainly

focuses on the two regulatory foci of promotion and prevention, which have been explained earlier.

Hypotheses

Given that these two theories are based on the same fundamental assumptions about human behavior, there should be several interesting interactions between the Theory of Planned Behavior, and the Theory of Self-Regulatory Focus. However, given the complexity of attempting to predict the interaction of two psychological theories, this paper is mainly concerned with conducting an exploratory study. As such the hypothesis are largely attempting to discern if there is any kind of noticeable interactions between the variables due to priming, and not necessarily predicting how these interactions are going to unfold.

H1a: Promotion primed water conservation attitudes will differ from prevention primed water conservation attitudes.

H1b: The promotion primed water conservation attitudes will differ from the control primed water conservation attitudes.

H1c: The prevention primed water conservation attitudes will differ from the control primed water conservation attitudes.

H2a: The promotion primed subjective normative about water conservation will differ from the prevention primed subjective normative about water conservation.

H2b: The promotion primed subjective normative concerning water conservation will differ from the control primed subjective normative concerning water conservation.

H2c: The prevention primed subjective normative concerning water conservation will differ from the control primed subjective normative concerning water conservation.

H3a: The promotion primed perceived behavioral control concerning water conservation will differ from the prevention primed perceived behavioral control concerning water conservation.

H3b: The promotion primed perceived behavioral control concerning water conservation will differ from the control primed perceived behavioral control concerning water conservation.

H3c: The prevention primed perceived behavioral control concerning water conservation will differ from the control primed perceived behavioral control concerning water conservation.

H4a: Intention to adopt water conservation technology or habits will differ for the promotion primed participants, and the prevention primed participants.

H4b: Intention to adopt water conservation technology or behaviors will differ for the promotion primed participants, and the control primed participants.

H4c: Intention to adopt water conservation technology or behaviors will differ for the prevention primed participants, and the control primed participants.

H5a: The promotion primed water conservation attitudes, social norms, and perceived behavioral controls will significantly predict behavioral intention to conserve water.

H5b: The prevention primed water conservation attitudes, social norms, and perceived behavioral controls will significantly predict behavioral intention to conserve water.

H5c: The control primed water conservation attitudes, social norms, and perceived behavioral controls will significantly predict behavioral intention to conserve water. All of the hypotheses will be tested with the following theoretical model in mind. Each variable will be in it's own priming group. Tests of significance will occur between the same variables of different priming groups.

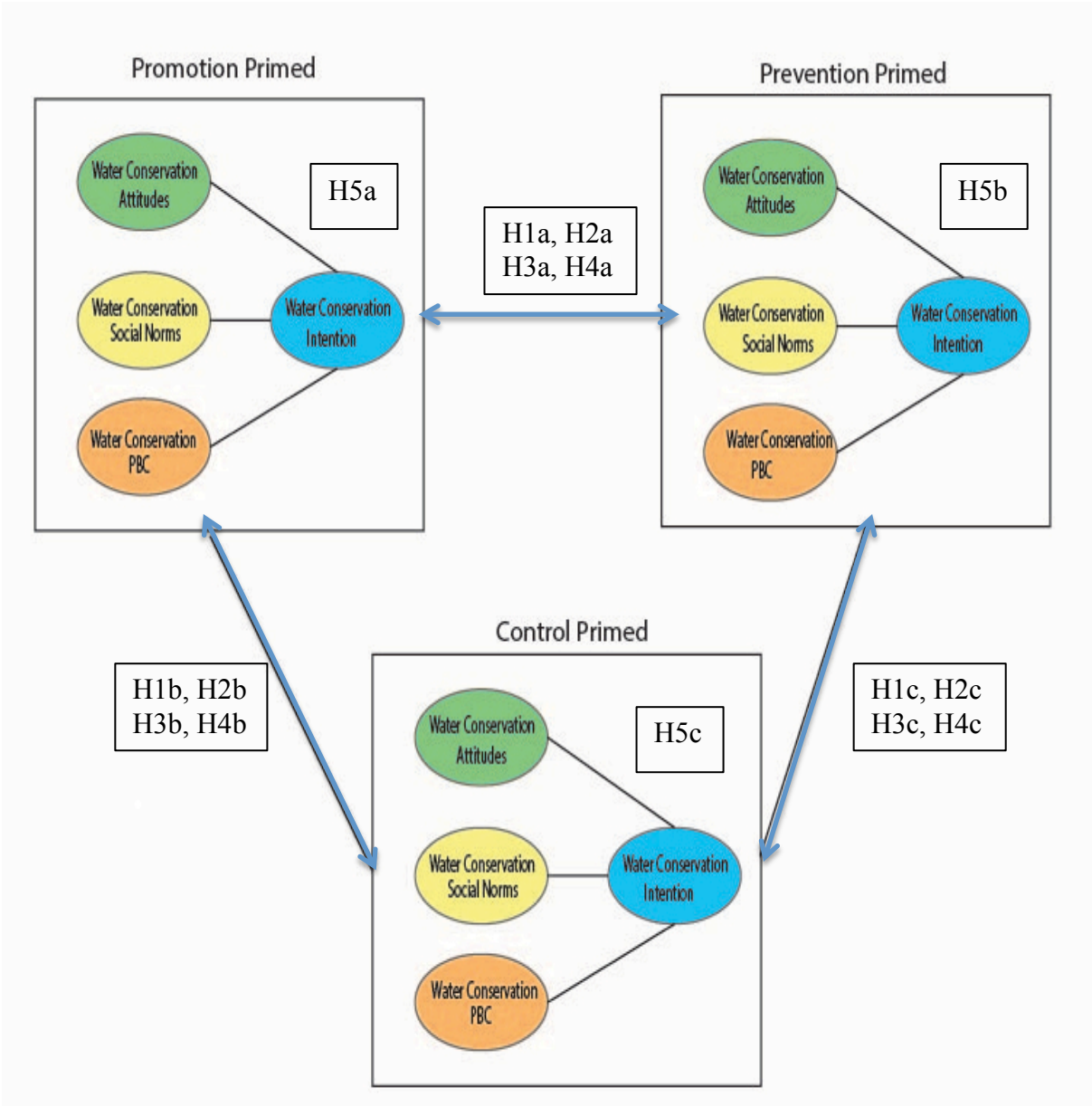

Figure 2. Research Model

CHAPTER III: METHODOLOGY

The purpose of this study was to further understand how various variables laid out by the Theory of Planned Behavior could be used or influenced to increase pro water conservation behavior, particularly among Hispanics in the Southwest. Of particular interest was the use of regulatory focus priming in order to modify the variables of the Theory of Planned Behavior. To facilitate these goals, an online survey was used to gather data about respondents. An online survey was decided upon because it offered the ability to quickly gather information in an organized fashion, as well as easily screen for a desired sample. The online survey was also found to be a relatively cost effective way to gather data. Of course the online survey was subject to several limitations. Surveys in general can result in bias if respondents do not honestly answer the questions, or over and under state certain items by inaccurately assessing the question. Online surveys in particular are vulnerable to certain special limitations. Only respondents who have access to a computer with an Internet connection can participate. Furthermore, only respondents who know how to operate and use email technology and web browsers will be able to respond. This means that online surveys tend to under represent very low-income individuals, and the elderly (Hudson 11). With these limitations in mind, the survey sought to gather the best possible data set through careful question design, and certain incentives to increase participation. Ultimately, the data obtained from the survey allowed for the ability to explore the relationship between regulatory focus priming and water conservation variables based on the Theory of Planned Behavior.

Population and Sample

While the study sought to understand water conservation behavior among Hispanics in the Southwest, the sample was largely produced from Hispanics living in Texas and California. This sample was chosen for a few main reasons. First, most water conservation programs for the general public target demand side consumers. These individuals take up a large share of municipal water usage (Mayer 7). In California for example, residential water consumption accounts for nearly 65% of municipal water consumption. Second, participation of consumers in water conservation behavior will be critical to increasing a community's resilience to future climate disruption or drought. Finally, most Hispanics immigrants moving into the Southwestern U.S are moving into California and Texas. Any key findings would easier to generalize to this population. To generate the sample, a list a respondents who met the desired criteria was purchased from a third party.

Questionnaire

The questionnaire used in this study was only one section of a larger survey seeking to more broadly understand Hispanic adaptation to climate change in the region. The questionnaire for this study was attached at the end of the larger survey so that the priming events would not influence the rest of the data set. The survey for this particular study sought to measure environmental attitudes towards water conservation, the subjective normative of water conservation, and the perceived behavioral controls associated with water conservation. These primary variables are to be used to predict intention to perform water conservation behavior as well as actual behavior. Before these variables are measured, a priming event is to be administered to causes the respondents to be either promotion focused, prevention focused, or

neither as a control group. Data about water conservation beliefs and behaviors will then be collected for each group, and compared for results. The questionnaire itself was designed and implemented through the survey program Qualtrics.

Variable: Water Conservation Attitude

The items for this variable sought to measure respondent's basic attitudes towards water conservation behavior and technology. This variable serves as one of the key elements of the Theory of Planned Behavior, and plays an important role in the prediction of behavioral intentions. The four items were measured with a 1 to 7 Likert type scale (1= strongly disagree, 7= strongly agree). The questions covered broad environmental concern, down to specific beliefs and attitudes about certain water conservation behavior. The questions about water conservation beliefs were adapted from Trumbo and O' Keefe 2011. Questions about specific behaviors and technologies were created by using the "Constructing a Theory of Planned Behavior Questionnaire: Conceptual and Methodological Considerations" recommendations set out by Icek Ajzen in 2002. In line with these considerations, the questions were created in such a way that they expressed a valuable/worthless assessment of the conservation behavior in question. The reliability for these questions was good, with a Cronbach's alpha of (alpha= 0.80). In order to allow for more efficient analysis, these items were combined by averaging the means for each item. The result is the variable *water conservation attitudes*

Variable: Water Conservation Social Norm

The items for this variable sought to measure how much respondents felt influence by environmental social and subjective norms. The social norm items were designed to measure how much individuals felt external social pressure from broader society to conform to certain water conservation behaviors. These questions focused mainly on an individual's feelings of external judgment or pride with regards to water conservation. These items were adapted from questions found in Goldstein and Cialdini 2008 in order to reflect water conservation social norms. The three items were measured with a 1 to 7 Likert type scale (1= strongly disagree, 7= strongly agree). Questions measuring the subjective norm focused on individual's perception of important referent people's opinions about water conservation. These items are intended to measure the effect that important people have on encouraging specific behaviors for an individual. These questions were also an adaption from the "Constructing a Theory of Planned Behavior Questionnaire: Conceptual and Methodological Considerations" recommendations set out by Icek Ajzen in 2002. The template questions were simply changed to represent the subject of water conservation. The Cronbach's alpha for the items measuring water conservation subjective social norms was at (alpha= 0.68), which is of decent reliability. In order to allow for more efficient analysis, these items were combined by averaging the means for each item. The result is the variable *water conservation social norm.*

Variable: Water Conservation Perceived Behavioral Control

The items for this variable were designed to measure the subject's perceived behavioral control about performing various water conservation behaviors. Questions took into account relatively broad perceptions about water conservation behaviors.

This was done so that subjects wouldn't make highly specific assessments of a particular activity, which might not accurately represent their overall feeling of control over their water consumption. This broader question design covers perceived behavioral controls about both adoption of water conservation technology, as well as simple changes in water consuming behavior. The original two items were measured with a 1 to 7 Likert type scale (1= strongly disagree, 7= strongly agree). Items were adapted from Lam and San-Pui 1999 in order to reflect a more broad range of water conservation behaviors. Questions were also designed with the "Constructing a Theory of Planned Behavior Questionnaire: Conceptual and Methodological Considerations" by Icek Ajzen in 2002 in mind. However, one of the items, "When individuals conserve water, they have little effect on the environment", was reverse coded. After some analysis, it was show that the reverse coding did not function as anticipated. Therefore the measurement of perceived behavioral control was reduced to a signal item to ensure consistency among the methods used to measure the variables. The fact that only one item was used for this variable means that no reliability tests could be ran. As such, item 3.1 makes up the variable *water conservation perceived behavioral control.*

Variable: Water Conservation Intentions

The follow questions were set up to measure the subject's intentions to perform water conservation behavior. These questions are all worded in the future tense, and imply that even if the subject is currently not performing water conservation behavior, that they have a desire to do so. These items were adapted directly for Ajzen 1991. The wording is identical except for the subject of water conservation. They are designed using a Likert-type scale 1 to 7 (1= strongly disagree,

7= strongly agree). Only two items are used for this section, one for general water conservation behavior, and another for the future adoption of water conservation technology. These two items should provide an adequate measurement of intention from which to draw conclusions upon. In order to allow for more efficient analysis, these items were combined by averaging the means for each item. The result is the variable *water conservation intention*. The Cornbach's alpha for the two water conservation intention items was acceptable, at an alpha of (alpha= 0.742).

Promotion Priming

These items were created to prime participants to be promotion focused. They were constructed in a free response form, in order to induce a unique emotional response for each subject. The first item is the primary priming mechanisms, while the second item is a check intended to reinforce the results of the first. Both questions are taken directly from Higgins 1998, and are regarded as a standard priming mechanism. These questions were placed before any of the Theory of Planned Behavior questions. Subjects are randomly assigned to the promotion-priming group. The effects of the promotion priming should have a noticeable effect on the outcome of the Theory of Planned Behavior questions. Due to the free response nature of these questions, no reliability test was able to be run.

Prevention Priming

These items were created in order to induce a prevention focus in survey participants. Like the promotion-focused items, the prevention focused priming questions are presented in a free response form, so that subjects each have their own unique responses. The first item functions as the main priming mechanism, while the

second item is designed to reinforce the emotional response from the first. Both questions are taken from Higgins 1998, and have been proven to be effective priming tools. These questions are also placed before the Theory of Planned Behavior questions. Subjects were randomly assigned to the prevention-priming group.

Control Priming

The items for this variable were used to create a control-primed group. These questions were free response, but were designed to not produce any noticeable promotion or prevention focus priming. These questions where about very emotionally neutral things that should create a much-*muted* response from participants. These items served as a baseline from which to measure the effect of regulatory focus priming on the outcomes of the Theory of Planned Behavior questions. These questions were based of a modified version of a regulatory focus study done by Chernev in 2004.

Table 1 Items Used to Measure Target Variables

Construct	Cronbach's Alpha	Item	Item Number
Water Conservation Attitude	α= 0.805	I am concerned about the impact of wasteful water usage on the environment.	1.1
		Doing things around the house that save water, such as watering the lawn at night or taking shorter showers, is good for the environment.	1.2
		Using water conservation appliances, such as low flow faucets and toilets, are good for the environment.	1.3
		Leaking pipes, faucets, or toilets hurt the environment.	1.4
Water Conservation Social Norm	α= 0.685	I feel like others would be proud of me if I made an effort to conserve water.	2.1
		People who are important to me think I should conserve water.	2.2
		I feel like others would judge me if I used too much water.	2.3
Water Conservation Perceived Behavioral Control	N/A	If I wanted to, I could start doing a lot of things to conserve water.	3.1
Water Conservation Intention	α= 0.742	I plan to do things to help save water in the future.	4.1
		I plan to purchase appliances that help conserve water the next time they need to be replaced.	4.2

Table 2 Items Used to Induce Regulatory Focus

Construct	Cronbach's Alpha	Item	Item Number
Promotion Priming	N/A	Please write down three or four of your hopes and dreams in your life.	5.1
		How would you feel if you accomplished these goals	5.2
Prevention Priming	N/A	Please write down three or four of your duties and obligations in your life.	5.3
		How would you feel if you couldn't uphold these responsibilities?	5.4
Control Priming	N/A	What is your current occupation?	5.5
		Where did you grow up?	5.6

Data Analysis

Analysis of the data will mainly focus on determining if there were any significant differences in the function of the Theory of Planned Behavior due to the effects of regulatory priming. Several tests will be ran using IBM SPSS statistics. The key avenues of analysis will included, MANOVA, Pearson correlations, and several linear regressions. When running the statistical tests, the variables will be grouped by priming using a grouping variable.

First, Multivariate Analysis of the Variance (MANOVA) will be used to test for significance between response means due to priming. This type of analysis will sort the variables into different groups according to priming. From there, the analysis will determine if the promotion and prevention means for each variable are significantly different from each other, as well as the control priming. A F-test of Wilks' Lambda is typically used to determine significance. It's important to note that MANOVA itself only determines if there is any significant difference between the

groups, and not which groups differ, and by how much. If significance is found through MANOVA, a post hoc test will be applied to further analysis the data. Typically, a Tukey's post hoc test is used, which compares the means of every treatment, to the means of every other treatment. It seeks to find the difference between any two means that is greater than an expected standard error. Data generated from this test allows conclusions to be drawn about the means.

Several Pearson correlations will be conducted before the creation of a linear regression in order to see if the different variables are significantly related to each other. This procedure checks for both positive and negative linear relationships between the variables. For the purpose of this study, the correlations will be grouped by priming, so that promotion variables are correlated to other promotion variables, and so on. No cross group correlations will be conducted. Several strong to moderate correlations are expected within the groups. Furthermore, strength of the correlation between some variables may be unique to a certain regulatory focus. Such findings would provide a good justification for conducting a linear regression.

Finally, linear regression will be used to examine how different variables affect behavioral intention under the effects of self-regulatory focus. Linear regressions seek to create a model that is best able to explain the variance among the variables. It focuses on minimize the sum of residual squares, which is equivalent to the error in the estimation model. A linear regression will be conducted for each regulatory focus in order to see which group is able to explain the most variance in behavioral intention towards water conservation. The results of the promotion and prevention regression will be compared to the control group. Furthermore, a comparison of the Beta coefficients for each regulatory focus could also yield insight into how certain priming increases or decreases the strength of certain variables of the

Theory of Planned Behavior. Furthermore, significant regression analysis will further confirm the mechanism of the Theory of Planned Behavior, and allow for more general conclusions to be drawn about the variables, and water conservation intention.

CHAPTER IV: RESULTS

This section will discuss the basic results from the data analysis procedures discussed in the previous chapter. The results of MANOVA, Pearson Correlations, and linear regressions will be examined in order to determine if there was any significant effect on the Theory of Planned Behavior due to regulatory priming. Linear regression will also be used to verify the expected function of the Theory of Planned Behavior, regardless of the effect of regulatory priming. As stated earlier, this study is primarily concerned with increasing water conservation intention among Hispanics in the American Southwest. Demographics will also be looked at in order to determine if the study accurately represents this group. Demographics also highlight how logical it would be to draw inferences about the group in question from the data.

Demographics

The demographics of the data are largely a result of the parameters that were submitted to the third party survey company. This company guarantees a certain type of data set that the customer orders, and often provides very reliable results. For the purpose of this survey, a data set was requested that contained only Hispanics in California and Texas. However, other areas of demographics were allowed to have more variance.

As expected, survey respondents were almost entirely self-reported Hispanics (89.2%; n= 679). However, a measurable number or respondents were reported as being Caucasian (6.8%, n= 52). All other ethnicities, including African American, Asian, American Indian, and Other constituted the remaining 4% of respondents at n=29. Some explanation for the data set not being 100% Hispanics could be due to the survey company having incorrect data on respondents, or individuals self-reporting a

different ethnicity than what the survey company has on file. Furthermore, individual's self-identity of ethnicity often differs from U.S Census definition of a certain ethnicity.

The data also accurately met the requirement that respondents be split between California and Texas. About 46% of the respondents were from Texas, at n=350. California had 54% of the respondents at n=411. The slight bias towards California should not be large enough to affect the ability to generalize the results to the broader Hispanic population

Age was another significant demographic that could affect the ability to extrapolate the results of the study to the Hispanic population of the areas in question. The mode age for the data was much younger than expected, with 18 to 24 year olds making up 35.3% of the respondents at n=269. The next largest group was 25 to 34 year olds at 29.3% of the respondents with n=223. People typically considered middle aged at 35 to 44 only constituted 13.7% of the respondents at n=104. Individuals in the 45 to 54 age group were even less represented at 8.8% with n= 67. Finally, people approach or at the age of retirement at 65+ made up 4.3% of the respondents at n=33. One of the most likely causes for the age set of the data to be skewed towards younger individuals is due to the fact that the survey was administered online via email. This effect has been observed before in other online surveys. The lower representation of the 35 to 44 and 45 to 54 groups relative to the younger 18 to 24 and 35 to 44 groups may affect the ability to extrapolate the data. Individuals in the 35 to 44 and 45 to 54 groups are the most likely to be homeowners, and therefore are the people who are most empowered to adopt water conservation technologies. Individuals in the younger demographics are typically renters, and are fairly limited in their ability to adopt technology. Instead for these individuals, water conservation is more likely to occur

on a behavioral level, which although potentially effective, is still a limitation on water conservation efforts. Regardless, the age distribution of the data should still be able to provide some reliable results with which to draw conclusions, as long as this potential limitation is kept in mind.

In addition to the skewed age distribution, the gender distribution was also not an accurate representation of the population as a whole. Of those who completed the survey 71.1% were female at n=541, while only 28.9% of respondents were male, at n=220. These results are very far off from the expected natural distribution of approximately 50% male and 50% female. The potential reasons for this skewed data are as of now unknown. It may be due to the fact that the incentive offered by the survey company was more geared towards female respondents.

Income levels were fairly evenly distributed across the sample group. The under $15,000 group represented 14.6% of the sample at n=111. Between $15,000 to just under $24,999 represented 14.2% of the sample with n=108. The $25,000 to $34,499 group contained 16.6% of the sample at n=126. From $35,000 to $49,999 also represented 16.6% of the sample at n=126. Interestingly enough, the $50,000 to $74,999 was the largest group of the sample, with 20.5% of the respondents at n=156. From here, the distribution drops of fairly sharply, with only 8.3% of participants reporting at an income level between $75,000 to $99,999 at n=63. The most wealthy participants, at an income level of $100,000 or more, represented 9.3% of the respondents at n=71. These demographics show that the data is centered mostly on middle and lower income individuals, with a few respondents approaching or at high income. As such this data should be easily to extrapolate to the broader population, at least relative to an individual's income.

The educational level of the sample was assessed in a fairly basic way. Respondents were asked whether they have only a high school degree, or some kind of 4 year college degree or higher. A total of n=488 respondents reported having only a high school degree, making up 64.1% of the sample. On the other hand, 35.9% of respondents said they had a 4 year degree or high, at n=273. This data shows that there is a slight educational skew away from higher education, but not enough to really impact the overall reliability of the data.

Employment was another significant demographic measured by the survey. About half the respondents reported be employed (51.4%, n=391), and the other half reported being unemployed or retired (48.6%, n=370). Of the respondents who were employed, 31.7% reported being employed full time at n=241, while 19.7% reported being employed part time at n=150. The high level of individuals reporting unemployment/retirement is cause for concern. Given that the demographics show that most of the sample is skewed towards younger generations, a high level or retirement is not likely. Instead these individuals may simply be full time students reporting unemployed. It's also likely that some of the respondents may temporarily be between jobs. Regardless, this unemployment level seems rather high compared to the general Hispanic population.

In conclusion, the demographics of this survey some show irregularities when compared to the general Hispanic population. However, the sample should be similar enough to extract useful data, and apply any conclusions to a smaller more specific subset of the Hispanic population in Texas and California.

Table 3 Sample Demographics

Ethnicity	**N**	**%**
Caucasian	52	6.8
African-American	7	.9
Asian	8	1.1
American Indian	1	.1
Other	13	1.7
Pacific Islander	1	.1
Hispanic/Latino(a)	679	89.2
Residence	**N**	**%**
Texas	350	46.0
California	411	54.0
Age	**N**	**%**
18-24	269	35.3
25-34	223	29.3
35-44	104	13.7
45-54	67	8.8
55-64	65	8.5
65+	33	4.3
Gender	**N**	**%**
Male	220	28.9
Female	541	71.1

Table 3 (Continued)

Income	N	%
Under $15,000	111	14.6
$15,000 to just under $24,999	108	14.2
$25,000 to just under $34,999	126	16.6
$35,000 to just under $49,999	126	16.6
$50,000 to just under $74,999	156	20.5
$75,000 to just under $99,999	63	8.3
$100,000 and over	71	9.3
Education	**N**	**%**
4-year college or graduate degree	273	35.9
High school degree or other	488	64.1
Employment	**N**	**%**
Full-time working	241	31.7
Part-time working	150	19.7
Unemployed/retired	370	48.6

Table 3.1 General U.S Hispanic Population Demographics

Age	
18-24	17.8
25-34	16.9
35-44	14.5
45-54	11.0
55-64	6.4
65+	4.9
Gender	
Male	49.0
Female	51.0
Table 3 (Continued)	
Income	
Under $15,000	16.5
$15,000 to just under $24,999	14.6
$25,000 to just under $34,999	14.00
$35,000 to just under $49,999	16.8
$50,000 to just under $74,999	17.0
$75,000 to just under $99,999	9.2
$100,000 and over	11.8
Education	
4-year college or graduate degree	30.0
High school degree or other	15.0
Employment	
Full-time working	89.0
Part-time working	N/A
Unemployed/retired	11.0

Summary of the Variable Means

The means for each of the variables are presented below. The means of the variables below are an average of the means for each item used to construct the variable. Overall the means show a fairly positive bias towards water conservation among the Hispanics community in the Southwest. The standard deviation among the means for each group is fairly close, suggesting that the favorable perspectives towards water conservation are consistent across priming events. This data alone should prove useful for policy makers and researchers. The implications for these particular findings will be discussed in the next chapter.

Table 4 Descriptive Statistics

Priming	Variable	Mean	Std. Deviation
Promotion	Water Conservation Attitude	5.78	.94
	Water Conservation Social Norm	4.56	1.17
	Water Conservation Intention	5.40	1.18
	Water Conservation Perceived Behavioral Control	5.25	1.23
Prevention	Water Conservation Attitude	5.74	1.04
	Water Conservation Social Norm	4.67	1.28
	Water Conservation Intention	5.50	1.22
	Water Conservation Perceived Behavioral Control	5.22	1.34
Control	Water Conservation Attitude	5.83	.94
	Water Conservation Social Norm	4.68	1.23
	Water Conservation Intention	5.45	1.15
	Water Conservation Perceived Behavioral Control	5.35	1.29

Pearson Bivariate Correlations

As predicting, there were several strong correlations among the variables used to determine intention to perform water conservation behaviors, or the adopt water conservation technology. When grouped by priming, the variables showed strong positive correlations to other variables of the same priming. for example, all the promotion primed water conservation attitudes, water conservation social norm, environmental perceived behavioral control, and Water conservation intention variables were significantly correlated to each other (alpha= .01, two-tailed). A similar effect was observed for the prevention and control primed versions of those same variables (alpha= .01, two-tailed). Across the board, the lowest correlation was (r= 0.36), and the highest was (r= 0.737), with every similarly primed variable yielding significance. However, comparing the internal correlations among the promotion, prevention, and control groups to each other yielded some interesting results. For example, the promotion water conservation attitude was correlated to the promotion water conservation intention with an (r= 0.655). While this is a strong correlation, the prevention water conservation attitude was correlated to the prevention water conservation intention with an (r= 0.737). The control primed versions of the same variables were correlated with an (r= 0.728). Another noteworthy correlation was among the prevention water conservation social norm and water conservation intention. These two variables were correlated with an (r= 0.564). The promotion version of those variables only had an (r= 0.411), while the control version had an (r= 0.48). Other such discrepancies exist between other variables, but at less obvious levels. The potential implications for these finding will be discussed in the next chapter. The table below shows the correlation outputs from SPSS.

Table 5 Correlations of Variables by Priming

Priming			Water Conservation Attitude	Water Conservation Social Norm	Water Conservation Intention	Water Conservation Perceived Behavioral Control
Promotion	Water Conservation Attitude	Pearson Correlation	1	.393**	.655**	.365**
		Sig.	N/A	.000	.000	.000
	Water Conservation Social Norm	Pearson Correlation	.393**	1	.411**	.406**
		Sig.	.000	N/A	.000	.000
	Water Conservation Intention	Pearson Correlation	.655**	.411**	1	.431**
		Sig.	.000	.000	N/A	.000
	Water Conservation Perceived Behavioral Control	Pearson Correlation	.365**	.406**	.431**	1
		Sig.	.000	.000	.000	N/A
Prevention	Water Conservation Attitude	Pearson Correlation	1	.552**	.737**	.406**
		Sig.	N/A	.000	.000	.000
	Water Conservation Social Norm	Pearson Correlation	.552**	1	.564**	.498**
		Sig.	.000		.000	.000
	Water Conservation Intention	Pearson Correlation	.737**	.564**	1	.376**
		Sig.	.000	.000	N/A	.000
	Water Conservation Perceived Behavioral Control	Pearson Correlation	.406**	.498**	.376**	1
		Sig.	.000	.000	.000	N/A
Control	Water Conservation Attitude	Pearson Correlation	1	.468**	.728**	.401**
		Sig.	N/A	.000	.000	.000
	Water Conservation Social Norm	Pearson Correlation	.468**	1	.480**	.460**
		Sig.	.000	N/A	.000	.000
	Water Conservation Intention	Pearson Correlation	.728**	.480**	1	.385**
		Sig.	.000	.000	N/A	.000
	Water Conservation Perceived Behavioral Control	Pearson Correlation	.401**	.460**	.385**	1
		Sig.	.000	.000	.000	N/A

**. Correlation is significant at the 0.01 level (2-tailed).

Multivariate Analysis of the Variance (MANOVA)

In order to determine if there was any significant difference between the means of the variables, a MANOVA test was ran. The main goal of this test was to determine if promotion or prevention priming had any significant effect on the way that participants responded to the questions. The results of the MANOVA are displayed below.

As the table shows, there appears to be no significant difference between the internal means of the water conservation attitude, the water conservation social norm, and the perceived behavioral control variable when they are grouped by priming. The water conservation attitude appears to show no significant among the promotion, prevention, or controlled primed means. The average attitude variable yielded an F-value of (F= 0.534) and a significance of (Sig. = 0.587), which is very far from the alpha value of (alpha= .05). Similar results were found for the Water Conservation Social Norm, which yield an F- value of (F= 0 .770) and a significance of (Sig. = 0.463). These results show that promotion, prevention, and control means for the water conservation social norm did not significantly differ from each other. The environmental perceived behavioral control followed a similar pattern. The environmental perceived behavioral control had an F-value of (F= 0.700) with a significance of (Sig.= 0.497) with regards to the differences among the means due to priming. Finally, the water conservation intention also yielded no significance under the same circumstances. This variable had an F-value of (F= 0.469) with a significance of (Sig= 0.626). The results of the initial MANOVA did not provide justification of a post hoc test. If significance had been found, a post hoc test would have been conducted to determine where the significance among the variables

actually fell. The implications for the findings of no significance will be discussed in the next chapter.

Table 6 MANVOA for the Variables by Priming

Variable	df	F	Sig.
Water Conservation Attitude	2	.534	.587
Water Conservation Social Norm	2	.770	.463
Water Conservation Intention	2	.469	.626
Water Conservation Perceived Behavioral Control	2	.700	.497

Linear Regression

Given that the MANOVA results came back with no significance, linear regression analysis constituted the bulk of the inferential statistics for this study. The goal of the linear regression was to see how much of the variance in behavioral intention towards water conservation could be explained by attitudes, social norms, and perceived behavioral controls. A linear regression was run for each of the variables under each different type of priming. The analysis yield some differences in the function of the regression under promotion, prevention, and control priming. The promotion primed variables were able to explain 48.3% of the variance (R^2=0.483) in the intention to adopt water conservation behaviors and technology. On the other

hand, the prevention primed variables predicted 57.9% of the variance (R^2= 0.579) in the intention to adopt water conservation behaviors and technology. Finally, the control primed variables predicted 55.8% of the variance in the intention to adopt water conservation behaviors and technologies.

In addition to these differences in the R^2 value, the beta coefficients for each priming group are fairly diverse. All beta coefficients in these models are reported unstandardized. The promotion prime group had a beta coefficient of .680 for Water Conservation Attitude with a significance of (alpha= .000). The promotion group also had a beta of .126 for the water conservation social norm, but was insignificant with an alpha of (alpha= .017). Finally, the promotion group had a beta of .177 for environmental perceived behavioral control, with a significance of (alpha= .000). The prevention-primed group had a beta coefficient of .717 for Water Conservation Attitude with a significance of (alpha= .000). This group also had a beta of .208 for water conservation social norm with a significance of (alpha= .000). However, the prevention group yielded a beta of .019 for environmental perceived behavioral control, which was found to be insignificant (alpha= .672). Finally, the control-primed group had a beta of (beta= 0.768) for Water Conservation Attitude, with a significance of (alpha= .000). The control group also had beta of .147 for water conservation social norm, with a significance of (alpha= .002). Finally, the control group had a beta of (beta= 0.053) for environmental perceived behavioral control, but this too was found to be insignificant with an (alpha= .219). Furthermore, the constants for each model came back as insignificant. Still, the fact that the beta coefficients for each priming varied considerably in terms of magnitude and significance means that the priming had at least some effect on the function of the Theory of Planned Behavior. These results will be discussed in the next chapter.

Table 7 Model Summary for Regressions

Priming	R Square
Promotion	.483
Prevention	.579
Control	.558

Table 8 Regression Coefficients by Priming

Priming	Variable	Unstandardized Coefficients (β)	Sig.
Promotion	Water Conservation Attitudes	.680	.000
	Water Conservation Social Norms	.126	.017
	Water Conservation Perceived Behavioral Controls	.177	.000
Prevention	Water Conservation Attitudes	.059	.000
	Water Conservation Social Norms	.051	.000
	Water Conservation Perceived Behavioral Controls	.044	.672
Control	Water Conservation Attitudes	.060	.000
	Water Conservation Social Norms	.047	.002
	Water Conservation Perceived Behavioral Controls	.043	.219

CHAPTER V: DISCUSSION AND CONCLUSIONS

Summary of Research

Increasing the willingness of Hispanic residents of the American Southwest to conserve water will play a key role in the long-term stability of the region. The projected increase of drought in the region means that urban centers will be required to adopt comprehensive water conservation plans in order to ensure the resilience of the community. Furthermore, the fact that the Southwest is experiencing a large growth in population, the majority of which is expected to be Hispanic, means that the participation of this demographic will be critical to the success of any long term water conservation efforts.

One of the main goals of this study was to understand the current perception of water conservation among Hispanics in the Southwest. Doing so would allow policy makers to have base understanding of how open the Hispanic population is to the idea of water conservation. This foundation should be able to aid in the preliminary development of water conservation plans aimed to increase participation through the influence of water conservation perceptions and intentions. As such the basic data should prove useful, regardless of the results of the experiential part of this study. This descriptive data shows that in general, this demographic has a favorable view on water conservation

The experimental section of this study was under taken with two key goals in mind. First, the study was seeking to understand how to influence individual's perceptions about water conservation for the purpose of increasing their intention to adopt water conservation behaviors and technology. This goal of the study sought to solve the practical problem of how to encourage and increase pro water conservation

behaviors. Results generated from the study will provide individuals or organizations in the area of water conservation with useful information about the function of water conservation attitudes, social norms, and perceived behavioral controls among Hispanics in the Southwest. The results could further be used to design programs that promote or reinforce a specific perception about water conservation.

The main theoretical framework for this part of the study was the Theory of Planned Behavior and the Theory of Self-Regulatory Focus. Both of these theories are largely concerned with behavioral psychology, in that they attempt to predict how individuals will behave based off certain psychographic variables. The Theory of Planned Behavior states that intention to perform a behavior is a significant predictor of actual behavior, and that in order to influence actual behavior, researchers should seek to influence intention. The Theory of Planned Behavior further states that intention is a function of three main variables, namely attitude toward the behavior, social norms about that behavior, and the perceived behavioral control surrounding the behavior. Therefore, understanding and modifying these three variables is the main avenue to influence intention. This study took a fairly unique approach towards the goal of increasing water conservation intention by seeking to modify the target variables in question through the use of the Theory of Self-Regulatory Focus. This theory states that individual process information through either a promotion focus, or a prevention focus. These two types of regulatory focus are essentially methods for which to process information. As discussed in the literature review, the ways in which individual's process information through their regulatory focus has an influence of their behavior in several interesting ways. Several implications of these types of frames have already been presented, but a few worth restating. Essentially, individuals were primed to be promotion framed, prevention framed, or a control group through a

priming event designed to induce that particular focus. Subjects were then asked typical questions designed to measure water conservation behavioral intention using the Theory of Planned Behavior as a framework. The differences among the responses from the promotion, prevention, and control groups were then compared to see if there was any effect. As stated earlier this study did not seek to predict specifically how regulatory focus would influence the Theory of Planned Behavior, but rather had the aim of exploring any potential effects, and how those effects might be useful for the practical implications of encouraging water conservation.

Results and Interpretation of Hypotheses

Hypotheses for this study were grouped into two overall sections. The first set of hypotheses concerned the comparison of the Theory of Planned Behavior variable means between each regulatory focus priming group. The second set of hypotheses concerned the creation of regression analysis to predict the behavioral intention of each priming group. Each set has its own unique implications for the goals of this study. Water conservation attitudes, social norms, and perceived behavioral controls were measured by the Theory of Planned Behavior was compared for each regulatory priming group according to the following hypotheses.

H1a: Promotion primed water conservation attitudes will differ significantly from prevention primed water conservation attitudes.

H1b: The promotion primed water conservation attitudes will differ significantly from the control primed water conservation attitudes.

H1c: The prevention primed water conservation attitudes will differ significantly from the control primed water conservation attitudes.

H2a: The promotion primed social normative about water conservation will differ significantly from the prevention primed subjective normative about water conservation.

H2b: The promotion primed social normative concerning water conservation will differ significantly from the control primed subjective normative concerning water conservation.

H2c: The prevention primed social normative concerning water conservation will differ significantly from the control primed subjective normative concerning water conservation.

H3a: The promotion primed perceived behavioral control concerning water conservation will differ significantly from the prevention primed perceived behavioral control concerning water conservation.

H3b: The promotion primed perceived behavioral control concerning water conservation will differ significantly from the control primed perceived behavioral control concerning water conservation.

H3c: The prevention primed perceived behavioral control concerning water conservation will differ significantly from the control primed perceived behavioral control concerning water conservation.

H4a: Intention to adopt water conservation technology or habits will differ significantly from the promotion primed participants, and the prevention primed participants.

H4b: Intention to adopt water conservation technology or behaviors will differ significantly from the promotion primed participants, and the control primed participants.

H4c: Intention to adopt water conservation technology or behaviors will differ significantly from the prevention primed participants, and the control primed participants.

Ultimately, according to the MANOVA analysis presented in the results section, regulatory priming did not have a significant effect on attitude, social norms, perceived behavioral control, or intention means among the groups. None of the promotion, prevention, or control group means for attitudes differed by a significant amount. As such this study failed to reject any of the null hypotheses concerning the variables surrounding the Theory of Planned Behavior for hypotheses H1 through H4.

These findings could be explained in a few different ways. First, the Theory of Self-Regulatory Focus simply might not affect the Theory of Planned Behavior in any meaningful way. It could be that these two theories don't share the common hedonic principle as strongly as presented in the literature review. As such any attempts to appeal to this common factor may only produce a very weak reaction. It seems likely that the Theory of Self-Regulatory Focus is less dependent on the hedonic principle than the Theory of Planned Behavior. This makes sense because the Theory of Planned Behavior specifically states that it is formulated from the hedonic principle. On the other hand, the theory of regulatory focus seeks to move beyond the hedonic principle, and is concerned with a more strategic and cognitive level of information processing (Higgins 1997). Therefore, these two theories might be operating on a different psychological level. As such it might not be useful for researchers or policy

makers to try to engaged individuals based on their promotion or prevention focus concerning information process about water conservation. This means that at least according to this explanation, regulatory focus does not influence the variables of the Theory of Planned Behavior in such a way that intention is modified.

However, it's also possible to explain these findings from errors in the design of the experiment. Perhaps the main drawback to this study is that it did not make use of the regulatory fit aspect of the Theory of Self-Regulatory Focus. This part of the theory states that if information is presented in a way that matches an individual's certain regulatory focus, then it becomes more influential, and that they are more likely to agree with what's being presented. For example, a promotion-focused individual is more likely to respond positively to information being presented as a gain, while a prevention-focused individual is more likely to respond positively to information being presented as a way to reduce potential losses. This study could have been designed so that the promotion group received questions about water conservation that were portrayed in a gain frame, while prevention focused individuals were given questions that were portrayed in a loss frame. Furthermore, each group could also been given questions that were a miss match between their regulatory focus, resulting in "regulatory dissonance" (Higgins 1998). Then differences between the means of the regulatory fit, and the regulatory dissonance could have been compared between all the groups to determine if there was significance. However, for the purpose of simplicity, this study was designed to determine significance through the use of a control group as grounds for a common comparison, and opted out of using regulatory fit. In retrospect this may have been a poor design choice, which may have limited the usefulness of the data. Essentially, the fact that this study only used the priming methods set out in the theory of

regulatory focus, and not necessarily the aspect of regulatory fit, could at least partly explain why the findings were not significant.

On the other hand, hypotheses concerning the regression analysis were confirmed. The study yielded significance in the areas that concerned the hypotheses below. As such it is possible to reject the respective null hypotheses for each of the hypotheses of H5 concerning regression analysis and regulatory priming.

H5a: The control primed water conservation attitudes, social norms, and perceived behavioral controls will significantly predict behavioral intention to conserve water.
H5b: The prevention primed water conservation attitudes, social norms, and perceived behavioral controls will significantly predict behavioral intention to conserve water.
H5c: The promotion primed water conservation attitudes, social norms, and perceived behavioral controls will significantly predict behavioral intention to conserve water.

Despite the fact that the theory of regulatory focus did not have a significant effect on influencing behavioral intention, the Theory of Planned Behavior itself still held true. All of the regression analyses for each priming group were able to significantly predict behavioral intention to conserve water to a fairly high degree. Several previous researchers have had success in predicting water conservation intention form the variables laid out in the Theory of Planned Behavior. These results confirm much of that literature, as well as creating some questions as the how Theory of Planned Behavior linear regressions functions under regulatory priming. It is likely that regulatory priming had some effect on the regression analysis. This claim finds some support in the bivariate correlations between the variables, the beta coefficients in the regression analysis, and the linear regression model itself.

Interpretation of Bivariate Correlations

The Bivariate correlations conducted for each group revealed several interesting difference that seem likely to be the result of priming. In the results, a few correlations were singled out because they exhibited fairly large differences. The promotion group water conservation attitude variable was correlated to the promotion intention with an (r= 0.655). On the other hand prevention water conservation attitude was correlated to the prevention intention with an (r= 0.737), and the control primed versions of the same variables were correlated with an (r= 0.728). The difference in correlation between the promotion and prevention appears noteworthy, and may indicate that water conservation lends itself to more of a prevention attitude over a promotion attitude. This would make sense, considering that a lot of water conservation programs are aimed at prevention wasteful water use, and ensuring resilience in the face of drought (Syme 2000). This type of information seems likely to appeal to risk aversion, which is a prevention trait. Another noteworthy correlation was among the prevention social norms and intention. These two variables were correlated with an (r= 0.564). The promotion version of those variables only had an (r= 0.411), while the control version had an (r= 0.48). The difference between the promotion and prevention correlations among social norms and intentions seems very large. Again this relationship lends itself to explanation through the Theory of Self-Regulatory Focus. According to the theory, promotion focused individuals are often more concerned with individual growth and benefit than they are with the potential social consequences of their actions. The opposite is true for a prevention focus, which often exhibits a concern for their status with peers. As such it should be expected that prevention focused social norms should play a larger role in predicting

water conservation intention than in a promotion focused setting. While these findings have relevance for those interested in water conservation behaviors, it's hard to know if these differences are significant without further analysis.

Interpretation of Linear Regressions

The linear regression of each priming group also exhibited some results that support the idea that regulatory focus at least had some internal on the function on the variables of the Theory of Planned Behavior. The model summary of the regression analysis yielded some differences in the function of the regression under promotion, prevention, and control priming. The promotion-primed variables were able to explain 48.3% of the variance (R2=0.483) in the intention to adopt water conservation behaviors and technology. On the other hand, the prevention primed variables predicted 57.9% of the variance (R2= 0.579) in the intention to adopt water conservation behaviors and technology. Finally, the control primed variables predicted 55.8% of the variance in the intention to adopt water conservation behaviors and technologies. The most notable result is the fact that regression for the prevention-primed group explains almost 10% more of the variance in intention than the promotion-primed group. Again it's important to note that the measurement of intention is within the same frame of priming as the variables. Still, these results could lend some evidence to the idea that water conservation lends itself more towards a prevention focus. However, that difference in the models is negligible when the prevention prime is compared to the control.

A comparison between the beta coefficients of each model also provides some evidence to the claim that regulatory priming had some effect on the function of the linear regression. There was a large discrepancy between some of the beta coefficients

of each priming group. Perhaps the most immediately obvious result is the fact that the beta coefficient for perceived behavioral control was significant for the promotion group (beta= 0.177, sig= .000), but insignificant for the prevention (beta= 0.019, sig=.672), and the control group (beta= 0.053, sig=.219). This result would not be expected if the priming had no effect at all on the function of the Theory of Planned Behavior. In fact these results are actually in line with some aspects of the theory of regulatory focus. A promotion focus is primarily concerned with gains, and often process information with an eager method. This type of focus is not concerned so much with the risk of certain actions, and often exhibits a faster rate of information processing. It makes senses that a promotion focused individual would be more sensitive to perceived behavioral control, in so much that they feel in control of their actions when in the active pursuit of gains. On the other hand, the fact that perceived behavioral control did not play a significant role in predicting intention in the regression is also worth consideration. Prevention individuals are associated with mitigating and managing risk. They often perceive outside forces as potential threats to their current status quo. It seems plausible that they would exhibit a lower reliance on perceived behavioral control, because they are more focused on outside forces influencing themselves, and not the other way around. Another interesting relationship is found between the social norm coefficients of each group. The prevention group regressions has a fairly strong social norm coefficient with (beta= 0.201, sig= .000), while the promotion group coefficient is (beta= 0.126, sig=.017), and the control groups social norm is (beta= 0.147, sig=.002). This find also is in line with some aspects of the Theory of Self-Regulatory Focus. For one, prevention focused individuals are often seeking to fulfill duties, obligations, and responsibilities. These inherent motivations of a prevention focus lend themselves to being associated

with social norms. Duties, responsibilities, and obligations are primarily in relation to some external social force that requires an individual to maintain his or effort to benefit a larger cause. As such it makes senses that social norms would play a larger role in the regression analysis for the prevention group. Still, it's important to note that while there are noticeable differences between the prevention and promotion group, both those groups do not differ by any substantial amount from the control group. This could mean that while one priming may be more effective at predicting water conservation intention relative to the other, neither one is noticeably superior over a control group.

Policy Implications

In the long run, water conservation efforts in the Southwest United States will depend heavily on the participation of the Hispanic community. This study has attempted to provide some insight on the issues, and create a theoretical basis for addressing the issue. Despite the fact that the experimental results of the study were mixed, the general conclusions from the Theory of Planned Behavior, and the variable measures bode favorably for the future of water conservation in the region. While the future of water conservation will surely be complex, future researchers, policy makers, and stakeholder should feel confident in their ability to accurately measure public opinion and water conservation intention using the well-established theories presented in this study.

Concluding Thoughts and Future Research

The theoretical implications for the Theory of Planned Behavior and the theory of regulatory focused are fairly mixed for this study. On one hand there was very little direct effect on the variable means due to regulatory priming. On the other, the regression analysis showed that there were some strong and noticeable discrepancies between the models, most likely due to the regulatory priming effect. This study does lend itself to further analysis of the bivariate correlations and the beta coefficients for each priming event. Digging deeper into the data and using more complex analysis may actually reveal some definitive significance between the promotion and prevention groups. However, such analysis was beyond the initial scope of this study, and as such it is difficult to draw any conclusions about the differences between the regulatory groups. Still, these findings at least provide some potential course of inquiry for future researchers. Of particular interests are the effects of perceived behavioral control under promotion, and the effects of the social norm under prevention. Future experiments could be designed to test these areas for real significance, and minimize any potential design flaws that were present in this study. For example, any future studies could take into account the aspect of regulatory fit, which this study failed to do. Still, given the limited scope of this study, the only solid conclusion that can be drawn is that regulatory focus does not fundamentally alter the key variables of the Theory of Planned Behavior in a significant way. Attitude, social norm, perceived behavioral control, and intention all had nearly identical means for each regulatory group. If regulatory focus does alter the Theory of Planned Behavior, it would be at a more subtle level than the direct psychographic variables. As such the Theory of Planned Behavior was shown to reliable and stable even under the effects

of priming. Despite not having a lot of theoretical significance, this find should still prove useful for accomplishing the practical goal of this study.

As stated earlier, one of the main goals of this study was to provide policy makers or interested parties with a framework for understanding how Hispanic residents in the Southwest perceive and support water conservation. This study shows that the Theory of Planned Behavior is a useful tool for understanding water conservation beliefs, and behavioral intentions. Interested parties tasked with managing water conservation programs should feel confident using the Theory of Planned Behavior as the theoretical framework for their programs. Perhaps one of the most important findings of this study is from the simple descriptive statistics of the results. Hispanic residents reported a high level of intention to conserve water, as well as very favorable attitudes about water conservation. Furthermore, the social norm variable reflects that Hispanic residents value the opinion of others with regards to water conservation. The perceived behavioral control variable also shows that this demographic feels relatively empowered to do something about water conservation issues. With these findings in mind, policy makers and researchers should be assured that water conservation efforts will find favorable standing among Hispanic residents. However, this study did not measure actual water conservation behaviors, and makes no claims or projections about the actual rate of water conservation. Instead, this study shows that water conservation intention among Hispanic residents is fairly high, and that actual water conservation efforts should be expected to be relatively successful.

WORKS CITED

Armitage, Christopher J., and Mark Conner. "Efficacy of the theory of planned behaviour: A meta-analytic review." *British journal of social psychology* 40.4 (2001): 471-499.

Ajzen, Icek. "Constructing a Theory of Planned Behavior questionnaire: Conceptual and methodological considerations." (2002): 2012.

Ajzen, Icek, and Thomas J. Madden. "Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control." *Journal of experimental social psychology* 22.5 (1986): 453-474.

Ajzen, Icek. *From intentions to actions: A Theory of Planned Behavior*. Springer Berlin Heidelberg, 1985.

Ajzen, Icek. "The Theory of Planned Behavior." *Organizational behavior and human decision processes* 50.2 (1991): 179-211.

Arvola, Anne, et al. "Predicting intentions to purchase organic food: The role of affective and moral attitudes in the Theory of Planned Behaviour." *Appetite* 50.2 (2008): 443-454.

Biel, Anders, and John Thøgersen. "Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behaviour." *Journal of Economic Psychology* 28.1 (2007): 93-112.

Burnkrant, Robert E., and Alain Cousineau. "Informational and normative social influence in buyer behavior." *Journal of Consumer research* (1975): 206-215.

Chernev, Alexander. "Goal-attribute compatibility in consumer choice." *Journal of Consumer Psychology* 14.1 (2004): 141-150.

Chernev, Alexander. "Goal orientation and consumer preference for the status quo." *Journal of Consumer Research* 31.3 (2004): 557-565.

Cialdini, Robert B., et al. "Managing social norms for persuasive impact."*Social influence* 1.1 (2006): 3-15.

Cleveland, M., Kalamas, M., & Laroche, M. (2005). Shades of green: linking environmental locus of control and pro-environmental behaviors.*Journal of Consumer Marketing*,*22*(4), 198-212.

Corral-Verdugo, Víctor, and Martha Frías-Armenta. "Personal normative beliefs, antisocial behavior, and residential water conservation." *Environment and Behavior* 38.3 (2006): 406-421.

Dunlap, Riley E., and Kent D. Van Liere. "The “new environmental paradigm”."*The journal of environmental education* 9.4 (1978): 10-19.

Eagly, Alice H., and Shelly Chaiken. *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers, 1993.

Ellen, Pam Scholder, Joshua Lyle Wiener, and Cathy Cobb-Walgren. "The role of perceived consumer effectiveness in motivating environmentally conscious behaviors." *Journal of Public Policy & Marketing* (1991): 102-117.

Florack, Arnd, Malte Friese, and Martin Scarabis. "Regulatory focus and reliance on implicit preferences in consumption contexts." *Journal of Consumer Psychology* 20.2 (2010): 193-204.

Fishbein, Martin, and Icek Ajzen.*Belief, attitude, intention and behavior: An introduction to theory and research*. 1975.

Fielding, Kelly S., et al. "Explaining landholders' decisions about riparian zone management: The role of behavioural, normative, and control beliefs." *Journal of Environmental Management* 77.1 (2005): 12-21.

Fraser, Caroline. "Megadrought in U.S. Southwest: A Bad Omen for Forests Globally." *Yale Environment 360*. Yale School of Forestry and Environmental Studies, 20 June 2013. Web. 1 Nov. 2014.

Gino, Francesca, and Joshua D. Margolis. "Bringing ethics into focus: How regulatory focus and risk preferences influence (un) ethical behavior."*Organizational Behavior and Human Decision Processes* 115.2 (2011): 145-156.

Goldstein, Noah J., Robert B. Cialdini, and Vladas Griskevicius. "A room with a viewpoint: Using social norms to motivate environmental conservation in hotels." *Journal of consumer Research* 35.3 (2008): 472-482.

Haws, Kelly L., Utpal M. Dholakia, and William O. Bearden. "An assessment of chronic regulatory focus measures." *Journal of Marketing Research* 47.5 (2010): 967-982.

Higgins, E. Tory. "Beyond pleasure and pain." *American psychologist* 52.12 (1997): 1280.

Higgins, E. Tory. "Promotion and prevention: Regulatory focus as a motivational principle." *Advances in experimental social psychology* 30 (1998): 1-46.

Howard, Brian. "California Report Warns of Worsening Economic Impacts of Drought." *National Geographic*. National Geographic Society, 15 July 2014. Web. 1 Nov. 2014.

Hustvedt, Gwendolyn. "Consumer preferences for blended organic cotton apparel." (2006).

Hudson, Darren, et al. "Telephone presurveys, self-selection, and non-response bias to mail and internet surveys in economic research." *Applied Economics Letters* 11.4 (2004): 237-240.

"How to Conserve Water and Use It Effectively." *Home*. Environmental Protection Agency. Web. 1 Nov. 2014. (2)

Jorgensen, Bradley, Michelle Graymore, and Kevin O'Toole. "Household water use behavior: An integrated model." *Journal of environmental management*91.1 (2009): 227-236.

Johnson, Hans. "Immigrants in California (PPIC Publication)." Public Policy Institute of California, 1 May 2013. Web. 1 Nov. 2014.

Johnson, Leigh. "Assessing Water Quality & Conservation Attitudes in a Low-income Multi-ethnic, Urban California Community." *Agriculture and Natural Resources*. University of California. Web. 1 Nov. 2014. (10)

Kandori, Michihiro. "Social norms and community enforcement." *The Review of Economic Studies* 59.1 (1992): 63-80.

Lam, San-Pui. "Predicting Intentions to Conserve Water From the Theory of Planned Behavior, Perceived Moral Obligation, and Perceived Water Right1."*Journal of Applied Social Psychology* 29.5 (1999): 1058-1071.

Lam, San-Pui. "Predicting Intention to Save Water: Theory of Planned Behavior, Response Efficacy, Vulnerability, and Perceived Efficiency of Alternative Solutions1." *Journal of Applied Social Psychology* 36.11 (2006): 2803-2824.

Laroche, Michel, Jasmin Bergeron, and Guido Barbaro-Forleo. "Targeting consumers who are willing to pay more for environmentally friendly products."*Journal of consumer marketing* 18.6 (2001): 503-520.

Lee, Angela Y., and Jennifer L. Aaker. "Bringing the frame into focus: the influence of regulatory fit on processing fluency and persuasion." *Journal of personality and social psychology* 86.2 (2004): 205.

Lynne, Gary D., et al. "Conservation technology adoption decisions and the Theory of Planned Behavior." *Journal of economic psychology* 16.4 (1995): 581-598.

Madden, Thomas J., Pamela Scholder Ellen, and Icek Ajzen. "A comparison of the Theory of Planned Behavior and the theory of reasoned action." *Personality and social psychology Bulletin* 18.1 (1992): 3-9.

Manicas, Peter T. "A history and philosophy of the social sciences." (1987).

Mayer, P.W., W.B. DeOreo, E. Opitz, J. Kiefer, B. Dziegielewski, W. Davis, J.O. Nelson, American Water Works Association (AWWA), *Residential End Uses of Water Study (REUWS), Denver, CO*, 1999.

Notani, Arti Sahni. "Moderators of perceived behavioral control's predictiveness in the Theory of Planned Behavior: A meta-analysis." *Journal of Consumer Psychology* 7.3 (1998): 247-271.

Parker, Dianne, Antony SR Manstead, and Stephen G. Stradling. "Extending the theory of planned behaviour: The role of personal norm." *British Journal of Social Psychology* 34.2 (1995): 127-138.

Parker, Kathleene. "Population, Immigration, and the Drying of the American Southwest." Center for Immigration Studies, 1 Nov. 2010. Web. 1 Nov. 2014.

Peattie, K., & Crane, A. (2005). Green marketing: legend, myth, farce or prophesy?. *Qualitative Market Research: An International Journal*, *8*(4), 357-370.

Perugini, Marco, and Richard P. Bagozzi. "The role of desires and anticipated emotions in goal-directed behaviours: Broadening and deepening the theory of planned behaviour." *British Journal of Social Psychology* 40.1 (2001): 79-98.

"P-1: Total Population Projections - Demographic Research." California Department of Finance. Web. 1 Nov. 2014. (8)

"Price of Water 2014: Up 6 Percent in 30 Major U.S. Cities; 33 Percent Rise Since 2010 - Circle of Blue WaterNews." *Circle of Blue WaterNews*. Circle of Blue, 7 May 2014. Web. 1 Nov. 2014. (11)

Rivis, Amanda, and Paschal Sheeran. "Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis." *Current Psychology* 22.3 (2003): 218-233.

Rocha, Veronica. "California Drought Continues to Take Heavy Toll on Reservoirs." *Local*. LA Times, 21 Aug. 2014. Web. 1 Nov. 2014. (3)

Ryan, Richard M., and Edward L. Deci. "On happiness and human potentials: A review of research on hedonic and eudaimonic well-being." *Annual review of psychology* 52.1 (2001): 141-166.

Schultz, P. Wesley, and Stuart Oskamp. "Effort as a moderator of the attitude-behavior relationship: General environmental concern and recycling." *Social Psychology Quarterly* (1996): 375-383.

Seager, Richard, et al. "Model projections of an imminent transition to a more arid climate in southwestern North America." *science* 316.5828 (2007): 1181-1184.

Seligman, Clive, et al. "Predicting Summer Energy Consumption from Homeowners' Attitudes1." *Journal of Applied Social Psychology* 9.1 (1979): 70-90.

"Southwest Impacts & Adaptation." *EPA*. Environmental Protection Agency. Web. 1 Nov. 2014. (5)

Sparks, Paul, Carol A. Guthrie, and Richard Shepherd. "The Dimensional Structure of the Perceived Behavioral Control Construct1." *Journal of applied social psychology* 27.5 (1997): 418-438.

Steinmitz, Katy. "California Imposes Unprecedented Water Conservation Rules." *U.S Environment*. Time, 15 July 2014. Web. 1 Nov. 2014. (4) (6)

Syme, Geoffrey J., Blair E. Nancarrow, and Clive Seligman. "The evaluation of information campaigns to promote voluntary household water conservation." *Evaluation Review* 24.6 (2000): 539-578.

"Water Efficiency Strategies." *Home*. Environmental Protection Agency. Web. 1 Nov. 2014. (9)

Westerling, A. L., and B. P. Bryant. "Climate change and wildfire in California."*Climatic Change* 87.1 (2008): 231-249.

W. Trumbo, Garrett J. O'Keefe, Craig. "Intention to conserve water: Environmental values, planned behavior, and information effects. A comparison of three communities sharing a watershed." *Society &Natural Resources* 14.10 (2001): 889-899.

Wigfield, Allan, and Jacquelynne S. Eccles. "Expectancy–value theory of achievement motivation." *Contemporary educational psychology* 25.1 (2000): 68-81.