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# An Experiment on the Effect of Construal Level and Small Wins Framing on Environmental Sustainability Goal Commitment

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*An Experiment on the Effect of Construal Level and Small Wins Framing on Environmental Sustainability Goal*

*Commitment*

BY

*James Walter O'Connor*

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree

Of

Executive Doctorate in Business

In the Robinson College of Business

Of

Georgia State University

GEORGIA STATE UNIVERSITY  
ROBINSON COLLEGE OF BUSINESS  
2012

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## ACCEPTANCE

This dissertation was prepared under the direction of the *James Walter O'Connor* Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Executive Doctorate in Business in the J. Mack Robinson College of Business of Georgia State University.

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GEORGIA STATE UNIVERSITY  
EXECUTIVE DOCTORATE OF BUSINESS PROGRAM  
J. MACK ROBINSON COLLEGE OF BUSINESS

## **DISSERTATION:**

# **AN EXPERIMENT ON THE EFFECT OF CONSTRUAL LEVEL AND SMALL WINS FRAMING ON ENVIRONMENTAL SUSTAINABILITY GOAL COMMITMENT**

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### Dissertation Committee

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**5/1/2012**

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## **An Experiment on the Effect of Construal Level and Small Wins Framing on Environmental Sustainability Goal Commitment**

### **4 ABSTRACT**

Companies are under increasing pressure from every category of stakeholder, from government and community to supply chain and consumer, to improve the environmental sustainability of their operations, products and services. To be most successful with environmental sustainability improvement initiatives, a company must have the commitment and effort of its employees. The purpose of this research is to study the effect of the company's approach to the initiative on the level of employee commitment to the company's environmental sustainability goals.

This research was conducted with a two-factor, factorial experiment. The experimental factors were construal level and small wins framing. Each of these factors had two levels, creating a 2x2 design with four treatment level combinations. A third study factor was environmental concern. Four other variables, goal difficulty, perceived organizational efficacy, gender and age, were included in the model as control variables. The dependent variable was goal commitment. Approximately 150 participants were recruited for the experiment and randomly assigned to one of the four fixed, treatment combinations. Hierarchical regression was used to estimate the factors' main and interaction effects, as well as the significance of the control variables.

Neither of the two manipulated variables, construal level and small wins, was found to have a significant main effect on goal commitment. There were, however, significant interactions between environmental concern and construal level, and between environmental concern and small wins framing, on goal commitment. At high levels of environmental concern, the effects of construal level and small wins were as hypothesized, but at low levels of environmental concern, the effects of construal level and small wins were opposite of what was expected. Additionally, both organizational efficacy and gender were found to significantly affect one's goal commitment.

Key words: Environmental Sustainability, Construal Level Theory, Small Wins Strategy, Environmental Concern, Goal Commitment

## 5 INTRODUCTION

### 5.1 Research Domain

The world community is increasingly focused on the natural environment and humanity's role in affecting its condition. This focus includes the impact of business with its use of natural resources and resulting waste streams. The focus also extends to the products produced and the impact of their lifecycles on the environment, especially their energy requirements and ultimate disposal. The need to make business more environmentally sustainable has been embraced by every category of stakeholder from government and community to business and consumer.

In response, companies are implementing initiatives to reduce energy and raw material use, eliminate waste streams and harmful chemicals, and develop more environmentally sustainable processes, products and services. In addition to meeting stakeholder demands, many companies are finding that pursuing environmental sustainability initiatives provide economic and other benefits.

As companies implement sustainability initiatives, as with any company initiative, success depends on the support and action of employees (Podsakoff, Ahearne and MacKenzie, 1997; Walz and Niehoff, 2000; Podsakoff, et. al., 2000; Gould-Williams and Davies, 2005). This research will study the effect of construal level, small wins framing and environmental concern on employee commitment to act in alignment with the organization's environmental sustainability goals, as manifested in an environmental sustainability improvement project.

## **5.2 Research Perspective**

This research is focused on improving the effectiveness of organizations implementing environmental sustainability initiatives through better understanding of what elicits employee goal commitment. Three factors were studied for their effect on employee commitment to act in alignment with the organization's environmental sustainability goals.

First, Construal Level Theory (CLT) describes how people perceive or construe an issue. This perspective informs this research topic because how an organization frames a project affects how the members will construe it. Also, the intent of the environmental sustainability initiative

communication is to persuade people regarding environmental sustainability and to motivate them to commit to act.

CLT describes how framing the psychological distance of an object affects one's perception of it. Psychological distance is a subjective mental construction of how near or distant an object is from the self in the present. Distance can be spatial distance, but also temporal distance, social distance or hypotheticality (likelihood or probability of occurrence). These four distances have a similar effect on one's construal and therefore a similar effect on one's conceptions and decisions. The effect on construal is that the more distal an issue or object is from the self, the higher and more abstract the level of construal of that issue or object. The higher and more abstract the construal of an issue, the more it connects with the idealistic, value-oriented inner self, and the more persuaded a person will be by a message regarding what that person values.

This research measured the effect of construal level in attaining commitment to support the organization's environmental sustainability goals.

Second, Small Wins Strategy (SWS) also provides a perspective on how people perceive or construe an issue. SWS focuses on the psychological effect of framing the magnitude of a problem and its solution. Problems defined as very large exceed one's bounded rationality, or cognitive limit, causing an incapacitating level of stress. The strategy of using small wins redefines large problems to smaller ones, allowing people to approach a problem creatively and with confidence and energy (Weick, 1984). When presented with the magnitude of global environmental problems, people can be overwhelmed by the magnitude and scope of the

problem, and less likely to believe they can contribute to a solution. By defining the problems and solutions of environmental sustainability as much smaller in magnitude, people will be more persuaded by a message regarding environmental sustainability.

This research measured the effect of framing the initiative and communication in terms of small wins on the willingness of organization members to commit to act in support of environmental sustainability goals as manifested in an environmental sustainability initiative.

A third factor, environmental concern, was included to study its effect on goal commitment, and also to study its moderating effect of the CLT and SWS factors. A person's preexisting level of concern for the environment and mankind's effect on it may influence that person's commitment to be engaged in the organization's environmental sustainability initiatives.

### 5.3 Research Questions

This research is focused on studying whether CLT, SWS and environmental concern influence employee commitment to organizational environmental sustainability goals.

Therefore the research questions are:

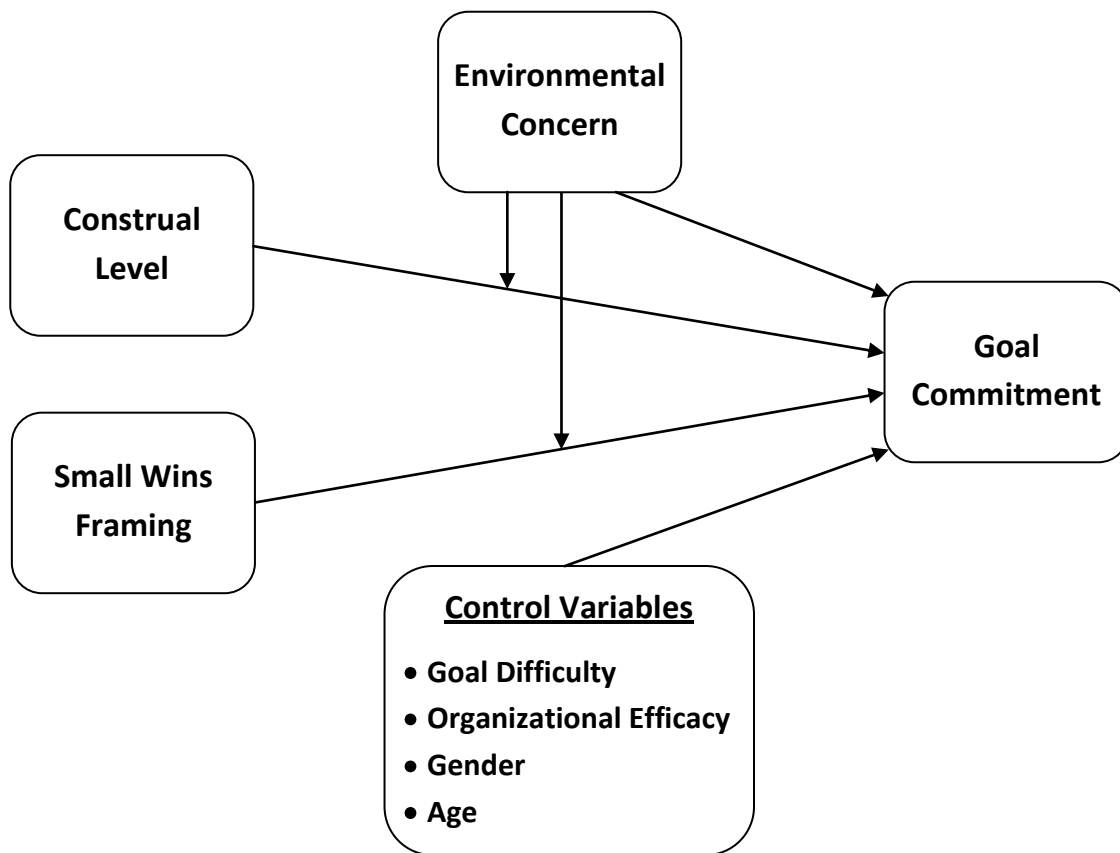
**RQ1:** *Does using a Construal Level Theory perspective to frame environmental sustainability initiatives elicit more goal commitment?*

**RQ2:** *Does using a Small Wins Strategy to pursue environmental sustainability initiatives elicit more goal commitment?*

**RQ3:** *Does the level of one’s environmental concern affect the level of goal commitment to environmental sustainability goals?*

**RQ4:** *Does the level of one’s environmental concern moderate the effects of construal level and small wins framing on goal commitment to environmental sustainability goals?*

## 5.4 Research Model





## 5.5 Research Approach

In this research, participants were exposed to communication from an organization in which they are a member about an environmental sustainability initiative. The communication was intended to elicit a commitment to act in support of the initiative. The purpose of this research was to study potential factors that influence the degree of willingness of participants to support and work toward the environmental sustainability goals of their organization. Two of the factors are cognitive in nature and relate to the manner in which the environmental initiative is communicated. One factor is the temporal construal of the environmental initiative. A second factor is the description of the magnitude of the environmental sustainability problem and solution. A third factor, environmental concern, was studied for its direct effect on environmental sustainability goal commitment, and also as a moderating factor.

Undergraduate students of the Johnson College of Business at the University of South Carolina Upstate were recruited for the study. They were told that participating would help the research of someone in the university system, and received no compensation. Each participant was randomly assigned to one of four scenarios describing the university system's environmental sustainability goals and initiative strategy. Each participant then completed a questionnaire verifying the manipulation of the two cognitive factors, measuring the participant's environmental concern, and measuring the commitment level of the participant to support the organization's environmental sustainability initiatives. Four control variables were also measured.

Contribution Area	Literature	Contribution
<i>Problem Situation (P)</i>	Environmental Sustainability	Improving organization environmental sustainability performance through improving the success of their initiatives.
<i>Area of Concern (A)</i>	Eliciting Organization Member Support for Environmental Sustainability Initiatives	Improving the alignment of members with organization environmental sustainability initiatives through improving the effectiveness of initiative framing and communication.
<i>Theoretical Framing (F<sub>1</sub>)</i>	Construal Level Theory	Adapting CLT to environmental sustainability initiative framing and communication.
<i>Theoretical Framing (F<sub>2</sub>)</i>	Small Wins Strategy	Adapting SWS to environmental sustainability initiative framing and communication.
<i>Theoretical Framing (F<sub>3</sub>)</i>	Environmental Concern	Improving environmental sustainability initiative framing and communication by understanding the effect of recipients' environmental concern.

Table 1 - Research Contribution

## 6 CONSTRUAL LEVEL THEORY

The purpose of this research was to study project and communication factors and their influence on organization member commitment to an environmental sustainability initiative.

Construal Level Theory is an appropriate lens with which to gain insight into attaining organization member commitment because one's construal heavily influences one's perception, conception and decision-making about an issue.

Construal Level Theory (CLT) focuses on the psychological distance between the self and the object or issue being perceived. Psychological distance is a subjective mental construction of how near or distant an object is from the self in the present. Distance can be spatial distance,

but also temporal distance, social distance or hypotheticality (likelihood or probability of occurrence). These four distances have a similar effect on one's construal and therefore a similar effect on one's conceptions and decisions. The effect on construal is that the more distal an issue or object is from the self, the higher and more abstract the level of construal of that issue or object (Trope and Liberman, 2010).

Proximal objects are perceived in more concrete and specific terms than more distal ones. Distal objects prompt high-level construals that are "relatively abstract, coherent and superordinate as compared to low-level construals" (Trope and Liberman, 2010). For example, a proximal construal of driving to work in your personal automobile includes its make, model, age, color, condition, gas mileage, etc. If you shift perspective to a more distal one, say 20 years from now, you abstract beyond your current automobile. The construal loses the specificity of the particular automobile you are driving. Indeed, this distal construal may not be an automobile at all but perhaps just "transportation" that includes all manner of modes and technologies with which you could personally travel.

These distal construals "tend to be simpler, less ambiguous, more coherent, more schematic, and more prototypical than concrete representations. High-level construals are also more likely than low-level construals to remain unchanged as one gets closer to an object or farther away from it" (Liberman and Trope, 2008). High level construals emphasize "core features of events and omit incidental features that may vary without significantly changing the meaning of events. Lower-level construals are concrete, relatively unstructured, and contextualized

representations that include subordinate and incidental features of events deemed secondary in the high-level construals” (Liberman and Trope, 2008).

### **CLT and Evaluation**

In the behavioral sciences, intertemporal discounting states that the value of an outcome reduces as the temporal distance to the outcome increases. The prediction from CLT, however, is that increased psychological distance, including temporal, shifts the attractiveness of an outcome toward its high-level construal value and away from its low-level construal value. Thus, the value of the outcome is dependent on how well it aligns with its construal. When the high-level value of an outcome is more positive than the low-level value, the outcome should be more attractive in the distant future (Liberman and Trope, 2008).

### **CLT and Decision-making**

“We make predictions, evaluations, and choices with respect to our construal of objects rather than the objects themselves. These construals depend not only on the actual attributes of the objects, but also on their psychological distance” (Liberman and Trope, 2008). According to CLT, central, goal-related features of outcomes constitute a high-level construal of these outcomes, whereas peripheral, goal-irrelevant features of outcomes constitute a low-level construal. Distancing an outcome should therefore increase the weight of central features relative to peripheral features (Liberman and Trope, 2008).

When making a decision about an action, one contrasts the costs and benefits, or the feasibility and desirability. Desirability is the value of the action’s end state, a high-level construal.

Feasibility involves the means used to achieve the end state, a low-level construal (Trope, Liberman and Wakslak, 2007). Kivetz and Tyler (2007) state this concept in terms of pragmatic concerns and idealistic values. They state that a distal time perspective fosters an emphasis on the idealistic, value-oriented inner self. A proximal time perspective fosters a focus on the practicality and more immediate costs and benefits. Therefore in decision-making, desirability concerns receive greater weight over feasibility concerns as psychological distance increases. Also, people emphasize identity attributes over instrumental attributes when making decisions framed in a distant future perspective, and emphasize instrumental attributes for decisions framed in a near future perspective. As Agerström and Björklund (2009) state it, “people view present behavior as being influenced more by contextual factors while they perceive future behavior as being governed more by stable personality characteristics.”

### **CLT and Values-based Decisions**

Values are relatively abstract and decontextualized, and inherently have a high construal. When making decisions about distal situations, people’s values take priority. As people get psychologically closer to the situation, their decisions are increasingly influenced by more specific attitudes and incidental social influences; value concern priorities are weakened as more specific concerns become more prominent (Trope and Liberman, 2010). High-level construals promote attunement to what is consistent about an object across multiple contexts, allowing individuals to transcend the particularities of the present situation and act according to their global concerns. Conversely, “psychological proximity triggers low-level construals,

which include the concrete and contextualized aspects of an object” (Trope and Liberman, 2010).

Eyal et al. (2009) found that the relationship between values and behavioral intentions depended on how the behavior was construed. Higher correspondence was found when behaviors are construed on a higher level and when behavior is planned for the more distant future than when the same behavior is construed on a lower level or is planned for the more proximal future. Since perceptions of distant future situations highlight more abstract, high-level features than near future situations, they are more influenced by high-level constructs such as values. “People’s values are better reflected in their intentions for the distant future than in their intentions for the immediate future or their actual behavior. Values predicted participants’ intentions for the distant future; feasibility concerns were more predictive of their intentions for the near future” Eyal et al. (2009).

Agerströmi and Björklund (2009) extended the study of CLT to the effect of temporal distance on people's moral concerns in situations where selfish motives clash with altruistic considerations. In their results, “people indicated they would be more likely to choose altruistic over selfish behaviors, reported they would feel more guilty about engaging in selfish behavior, thought acting selfishly would be more immoral, and were more likely to commit to altruistic behavior when thinking about distant versus near future events.”

### **Persuasiveness of Value-Based Messages**

Fujita, et. al. (2008) examined the persuasiveness of advertising that included values in the context of near future versus distant future framing. Participants were shown advertisements for a sale of DVD players. Some of the DVD players were on sale that week (near future condition) and some were on sale in three months (distant future condition). They read seven arguments endorsing a particular DVD player. Six of these arguments were identical for all participants. For the seventh argument, half of the participants received an argument that stressed an additional positive value-based feature (the DVD player is made of environmentally-friendly materials). The other half of the participants received a seventh argument that stressed an additional value-neutral feature (the manual is easy to use).

The study's authors found that people emphasized the value aspects (in this case, environmental impact) of the product when considering a purchase in the distant future (high-level construal). When participants considered the purchase in the near future (low-level construal), the value aspects of the product had no impact on the potential purchase. The conclusion, consistent with CLT, is that value-based persuasive arguments appear to be more persuasive for temporally distant objects as opposed to temporally near objects. The authors state "it is argued that the temporal distance of attitude objects systematically changes how the object is mentally represented, and thus influences the strength of particular persuasive appeals."

In another study, Thompson and Stoutemyer (1991) found that focusing on the long-term environmental consequences of home water conservation improved families' water conservation performance versus focusing solely on the personal economic benefits that could be gained from conservation.

Relating CLT to the current research, Fujita, et. al. (2008) state that "there has been little research examining directly whether the temporal distance of an attitude object affects persuasion processes." I have found no research on how construal level affects employee goal commitment. In the specific context of environmental sustainability communication, framing the focus at a high-level construal is counter to current approaches. Indeed, it is intuitive that to motivate people to action on the environment, one should stress the urgency, immediacy and local effect of the problem, decreasing its psychological distance. However, this is opposite of the approach consistent with CLT.

Framing environmental communication in a psychologically distal manner will foster a change in employees' mental construal, changing the aspects of the issue attended to and perceived as relevant. The activation of high-level construals by increasing psychological distance should facilitate attention to high-level (primary, abstract, desirability, goal-relevant, values-based) versus low-level (incidental, concrete, feasibility, goal-irrelevant) aspects of the issue.

## Hypothesis

H<sub>1</sub>: Environmental sustainability initiatives that are framed in a psychologically distal manner will elicit higher levels of goal commitment.



## 7 SMALL WINS STRATEGY

Like Construal Level Theory, Small Wins Strategy is an appropriate lens with which to gain insight into people's decision to support the goals of their organization. Small Wins Strategy (SWS) focuses on the psychological effect of defining the magnitude of a problem. Problems defined as very large exceed one's bounded rationality or cognitive limit causing a dysfunctional level of arousal. The strategy of using small wins redefines large problems to smaller ones, allowing people to approach a problem creatively and with confidence and energy (Weick, 1984).

### The Yerkes-Dodson Law

According to the Yerkes-Dodson (YD) Law, there is an inverted "U" shaped relationship between the level of stress or arousal and the level of performance. If problems are defined as too small, they will be perceived as trivial and will not motivate action. If problems are defined as too large, people become overwhelmed, mentally incapacitated and incapable of action (Broadhurst, 1959).

High levels of stress or arousal cause one's coping responses to become more primitive in at least three ways: "(1) people who try to cope with problems often revert to more dominant, first learned actions; (2) patterns of responding that have been learned recently are the first ones to disappear, which means that those responses that are most finely tuned to the current environment are the first ones to go; and (3) people treat novel stimuli as if they are more

similar to older stimuli than in fact they are, so that clues indicating change are missed” (Staw, Sandelands, and Dutton, 1981).

This means that very large problems such as environmental degradation that are relatively new are hard for people to perceive and appropriately respond to. “Highly aroused people find it difficult to learn a novel response, to brainstorm, to concentrate, to resist old categories, to perform complex responses, to delegate, and to resist information that supports positions they have taken” (Holsti, 1978).

### **Individual Capabilities**

Stress is also related to individual capabilities. Low levels of stress occur when the problem or goal is easy relative to one’s capability. High levels of stress occur when the problem or goal is difficult relative to capability. Relating this to solving problems, if one feels that he or she is incapable of solving the problem, stress level will rise. If one knows how to solve the problem or knows a means to develop a solution, then one feels capable. Even in the context of a very difficult problem, levels of stress will not be psychologically debilitating if one has the capability to address the problem, and the challenge of the problem may improve performance.

If one does not have the capability to address a problem, reducing the perceived difficulty of the problem will reduce the stress level from debilitating levels. If stress level is too high, attention to the details of the problem becomes more selective and edited, and people overlook the minor leverage points from which the problem might be attacked (Weick, 1984).

This means that people need lower arousal to keep diagnostic interference at a minimum and

to allow for the practice of relatively complex skills. To keep problem-related arousal at modest intensities, people need to work for small wins (Weick, 1984).

The objective is to define the problem such that people see that their capabilities exceed what is required for success but not by too great a margin. There is a middle ground in the YD inverted “U” curve in which stress is sufficiently motivating to promote action but not so much as to cause incapacity.

### **Applying the Small Wins Strategy**

Applying the SWS focuses primarily on the problem definition and secondarily on the problem resolution. Problems are defined to operate in the center of the YD curve, optimizing peoples’ capabilities and level of response. This approach has the additional benefit of helping determine a solution “because the content of appropriate solutions is often implied by the definition of what needs to be solved” (Weick, 1984).

The strategy is to redefine a large problem as a smaller, less difficult problem. This approach promotes innovative approaches and resolution of the problems. The small wins strategy does not attempt to solve the large problem in one step, a single win, but in a series of small wins, creating a pattern of solutions and success. This is not to imply that each problem is solved initially and the approach is not predicated on having no failures. However, the failure of a moderately-sized problem is not severe, and in the failure may come the knowledge and experience for subsequent success. Small wins can be viewed as small “experiments that test

implicit theories about resistance and opportunity and uncover both resources and barriers that were invisible before the situation was stirred up” (Weick, 1984).

In addition to the cognitive benefits of reducing the size of the problems, it also has the benefit of making the problems more manageable. If the size of the problem is smaller, its solution is also smaller, easier to implement, and more immediate in its visible success. It is difficult to have a sustained effort, especially a complex one. Having solutions that are quicker to implement facilitates success, and having more immediate feedback fosters more effort. Additionally, reducing the size of the problem often reduces the scope to a more local one. This allows for better tailoring a solution to a more specific contextual environment.

The hypothesized benefits of SWS go beyond the individual level. As problems are solved, the nature of their smaller size and the fact that there has been success makes it more likely to attract support and less likely to attract opposition to further progress. With each successive success, more inertia is created, motivating further effort and fostering future wins.

The SWS does not take a large problem and merely break it into a set series of smaller steps or pieces, planning the solution to the large problem from start to finish. “Small wins do not combine in a neat, linear, serial form, with each step being a demonstrable step closer to some predetermined goal” (Weick, 1984). “More common is the circumstance where small wins are scattered and cohere only in the sense that they move in the same general direction or all move away from some deplorable condition. Ideals, broad abstract ends, and lasting ambitions are less influential in defining a means-ends structure for a series of small wins than they are in

articulating the specific trade-offs that occur when each one improves something at the expense of something else” (Lindblom, 1979). SWS “enables firms to develop an emergent pathway of successful actions that, linked together, build momentum to become a cohesive and progressive response” (Haigh and Griffiths, 2008).

Also, “small” is relative. “Rather than be deemed ‘small’ by any objective measure, small wins are small relative to the scale of the issue and the entity addressing it. Incremental change strategies are by no means new; they have been the core of change processes utilized in organization development and quality management approaches. However, the strength of the small wins method is that it provides a tailored outcome-oriented method that enables complex and often conflict-laden issues to be directly addressed and actively managed within a firm’s specific context. This is in contrast with other incremental change programs that have focused on process ahead of results, or have prescribed specific actions ahead of understanding the context” (Haigh and Griffiths, 2008).

Reducing the level of stress through a small wins strategy allows for a more sophisticated response rather than a primitive one. Responses that are more complex, more recently learned, and more responsive to more stimuli in changing situations usually have a better chance of producing a lasting change in dynamic problems. “The potential attractiveness of a small win is that it operates simultaneously on importance, demands, and resources and defines situations away from the ‘close calls’ where higher uncertainty and higher stress reduce problem-solving performance. Small wins induce a degree of certainty that allows greater

access to the very resources that can insure more positive outcomes” (Weick, 1984).

Sometimes problem solving suffers from too little arousal. When people think too much or feel too powerless, issues become depersonalized. This lowers arousal, leading to inactivity or apathetic performance. The prospect of a small win has an immediacy, tangibility, and controllability that could reverse these effects (Weick, 1984).

### **Hypothesis**

H<sub>2</sub>: Environmental sustainability initiatives that are framed in terms of small wins will elicit higher levels of goal commitment.

## **8 ENVIRONMENTAL CONCERN**

Given that the focus of this research is finding factors within organization environmental sustainability initiative framing and communication that will improve the effectiveness with which the organization elicits goal commitment, it is hypothesized that a person’s concern for the environment may be an important factor. Someone with a high level of environmental concern may inherently be more willing to commit than one who has a low level of environmental concern. Additionally, one’s level of environmental concern may moderate the effect of the CLT and SWS factors.

### **Environmental Concern**

The term ‘environmental concern’ has referred to a wide range of environmentally related cognitions, affects, perceptions, emotions, beliefs, knowledge, attitudes, values, ecological worldview, behavioral intentions, and behaviors (Bamburg, 2003; Dunlap, 2008; Xiao, 2011).

Since the 1970's, researchers have worked to develop constructs and measurements for environmental concern. In 1973, Maloney and Ward, in prescient recognition, stated that "technology has won battles in the past, in the arenas of medicine, transportation, and automation, but the solution to (the ecological crisis) does not lie in traditional technological approaches but rather in the alteration of human behavior. In short, the ecological crisis is a crisis of maladaptive behavior." Maloney and Ward developed an Ecological Scale to facilitate research into this area. Their scale consisted of four subscales - verbal commitment, actual commitment, affect (emotionality related to ecological issues), and knowledge (Maloney and Ward, 1973).

In 1978, Weigel and Weigel developed an Environmental Concern Scale as a research tool to measure an "individual's relatively enduring beliefs and feelings about ecology" (Weigel and Weigel, 1978). Also in 1978, Dunlap and Van Liere developed their New Environmental Paradigm (NEP) instrument intended to measure an individual's environmental beliefs by contrasting the "dominant social paradigm" of "individualism, laissez-faire government, beliefs in progress, material abundance and the goodness of growth, faith in the efficacy of science and technology, and a view of nature as something to be subdued" with a paradigm of "existence of ecological limits to growth, importance of maintaining the balance of nature, and rejection of the anthropocentric notion that nature exists primarily for human use" (Dunlap and Van Liere, 1978; Dunlap, 2008).

There have been other environmental attitude scales developed, but these three have been the only ones that have been widely used (Hawcroft and Milfont, 2010). However, both the Ecological Scale and the Environmental Concern Scale include items referring to specific environmental topics that have become dated as new issues emerge (Dunlap and Jones, 2002). “The NEP Scale avoids this issue by measuring general beliefs about the relationship of human beings to the environment” (Hawcroft and Milfont, 2010). Xiao (2011) states that the NEP Scale has “become the most widely used measure of general environmental beliefs.”

In 2000, Dunlap, et. al. (2000) revised the original scale, broadening the content of the measure by expanding from three to five facets of an ecological worldview. These five facets are 1) the fragility of nature’s balance (beliefs that human activities impact the balance of nature), 2) the reality of limits to growth (the belief that the earth has limited resources), 3) rejection of exemptionalism (beliefs that human beings are not exempt from the constraints of nature), 4) anti-anthropocentrism (beliefs that human beings have the right to modify and control the natural environment), and 5) the possibility of an eco-crisis (beliefs that humans are causing detrimental harm to the physical environment). The revision expanded the scale from 12 items to 15 items, with three items measuring each of these five hypothesized facets (Hawcroft and Milfont, 2010; Amburgey and Thoman, 2011). The measures are shown in Appendix B – The Environmental Concern Construct.



### **Environmental Concern as a Factor**

Environmental concern as measured by the NEP scale measures a general ecological worldview that influences attitudes, beliefs, and behavior intentions about specific environmental issues (Dunlap, et. al., 2000). Bamburg (2003) states that “environmental concern is an important indirect determinant of environmental behavior. As a general orientation pattern it influences the definition of a specific situation that is the generation of situation-specific cognitions.”

Social psychological research has shown that this situation-specific cognition is a direct determinant of a specific behavior (Ajzen and Fishbein, 1980; Bamburg, 2003)

General environmental concern has a substantive direct effect on the perception and evaluation of specific situations. In determining the relevancy of issues and framing the decision, general attitudes are important indirect determinants of specific behaviors. General environmental concern is situation invariant, and cannot influence specific behaviors directly (Bamburg, 2003).

Xiao and Dunlap (2007) frame the effect of environmental concern in terms of “concern for the environment in general and that for more specific environmental problems.” Gray (1985) theorizes that environmental concern consists of two groups of beliefs. ‘Primary beliefs’ such as general environmental concern refer to the environment as a whole. ‘Derived beliefs’ address specific aspects of the environment. Xiao (2011) states that “the literature generally agrees that more generalized environmental concern, such as ecological worldview, tends to causally precede beliefs and attitudes toward more specific environmental problems.”

“Concern mediates specific concerns which impact intention which impacts behavior”

(Bamberg, 2003). “The most proximal predictors of behavior are behavioral intentions, which in turn are anteceded by (a) the extent to which individuals hold a favorable attitude toward the behavior, (b) individuals’ perceptions of the norms and conventions regarding the behavior (i.e., subjective norms), and (c) the extent to which the individual perceives the behavior at hand to be under his or her personal control (i.e., perceived behavioral control)” (Oreg and Katz-Gerro, 2006). Bamberg (2003) also demonstrated in his model that intention precedes behavior ( $r = 0.77$ ). “Environmental values and environmental concern, can account for the significant partial correlations between behaviors after controlling for background characteristics” (Thøgersen and Olander, 2006).

### **Measuring Environmental Concern**

To measure environmental concern in this study, the New Environmental Paradigm (NEP) scale developed by Dunlap et al. (2000) was used. The measures are shown in Appendix B – The Environmental Concern Construct. Some researchers have treated the scale as unidimensional (reflective) and some have treated the scale as correlated (formative) scales (Amburgey and Thoman, 2011; Xiao and Dunlap, 2007). Dunlap, et. al. (2000) state that the scale’s 15 measures “can be treated as an internally consistent summated rating scale.” Xiao (2011) used an eight-measure subset of the 15 NEP measures, measuring the facets “limits to growth,” “anti-anthropocentrism,” and “exemptionalism.” Using a factor analysis, he found that the eight measures “form a unidimensional measure of the NEP with adequate to very good measurement reliability.” Lundmark (2007) states that “the New Environmental Paradigm

(NEP) is widely acknowledged as a reliable multiple-item scale to capture environmental attitudes or beliefs.” Hawcroft and Milfont (2010) state that “the reliability and validity of both the original and revised NEP Scales as a general measure of EA are well-established.”

Amburgey and Thoman (2011) conducted a study to understand the factor structure of NEP. However, rather than conduct a factor analysis, they studied three models developed a priori. They modeled the five facets as one fifteen-measure scale, a set of five independent scales, each with three reflective measures, and a set of five correlated subscales, each with three reflective measures. The authors found that “a second-order factor structure with five interrelated dimensions provides a better fit for the data than a single factor structure or five independent factors structure. Results show that the NEP is best represented as correlated scales involving five facets.”

Some researchers have conducted factor analyses to study the NEP construct, with very inconsistent results. Albrecht, et. al. (1982) used the 12-measure NEP instrument, and reported that the factor analysis produced a three-factor model. Geller and Lasley (1985) conducted a factor analysis on the 12-measure instrument. In their analysis, they deleted three measures from the instrument, resulting in a nine-measure instrument that loaded into three factors. The study conducted by Noe and Snow (1990) resulted in a seven-measure, two-factor model. Scott and Willits (1994) produced a two-factor model from the 12-measure instrument. Lastly, Ji (2004) commented on these other studies, saying that the factor analyses in some cases were

suspect. In his research, the results supported an eight-item, two-factor model of the scale. Ji reported low reliability, as reflected by a Cronbach's Alpha of 0.60 for the second factor.

With an instrument that is nearly 35 years old, there has been relatively little study of the factor loadings. The few studies referenced above are about the extent of the studies found. While its reliability is much-touted in the literature, it is clear that there is not much empirical support for this confidence. Therefore, in this research, the environmental concern construct was evaluated with a factor analysis and a reliability analysis. Given the lack of empirical evidence supporting this scale's factor loadings, this research is an opportunity to add to the understanding of the NEP instrument.

## Hypotheses

H<sub>3A</sub>: Individuals with a higher level of environmental concern will provide higher levels of goal commitment to environmental sustainability goals.

H<sub>3B</sub>: Environmental concern moderates the relationship between construal level and goal commitment for environmental sustainability goals such that the effect of construal level will be greater at higher levels of environmental concern.

H<sub>3C</sub>: Environmental concern moderates the relationship between small wins framing and goal commitment for environmental sustainability goals such that the effect of small wins will be greater at higher levels of environmental concern.

## 9 CONTROL VARIABLES

### 9.1 Goal Difficulty

As discussed earlier, according to the Yerkes-Dodson (YD) Law, there is an inverted “U” shaped relationship between the level of stress and the level of performance. If problems are perceived as too small, they will be viewed as trivial and will not motivate action. If problems are perceived as too large, people become overwhelmed, mentally incapacitated and incapable of action (Broadhurst, 1959).

In the research about goal setting, “nearly 400 studies have shown that specific, difficult goals lead to better performance” (Locke and Latham 1990), including a meta-analysis by Tubbs (1986) and a study by Wright (2004) finding that there is a relationship between goal difficulty and work motivation, with the more difficult or challenging goals motivating employees more.

Given the strong relationship between goal difficulty and work motivation reported in literature, a measure of goal difficulty was included in the questionnaire, and included in the data analysis as a control variable. One might even view this as an attempt at a direct measure of where the project is perceived to fall on the YD curve. Work or goal motivation will then be defined and measured in this research as goal commitment.

A five-measure instrument was developed to measure goal difficulty by Wright (2004). This instrument was based on Locke and Lantham (1990), Lee, et. al. (1991), and Steers (1976).

Wright (2004) reported that the five-measure construct loaded into one factor, and had a

Cronbach's Alpha of 0.85. The measures are shown in Appendix C – The Questionnaire, labeled (GD).

## 9.2 Organizational Efficacy

Closely related to goal difficulty is efficacy. A goal is difficult or easy in relation to one's capability (Lee and Bobko, 1992; Wright, 1992). The same goal can be given to two different people, and based on their capabilities, be perceived as very easy by one and unachievable by the other.

Relating this perception of goal difficulty to motivation, confidence in one's abilities, called self-efficacy, influences one's motivation to achieve the goal. Both non-challenging goals and too challenging goals, relative to one's capability, engender lower motivation than goals that are challenging and achievable (Wright, 2004). Durham, et. al. (1997) state that people with higher self-efficacy are motivated to adopt higher goals than people who have lower self efficacy. A person is motivated by a difficult goal if that person perceives that he or she has the ability to achieve the goal.

Bandura (1986) first conceived that efficacy is as important at the group level as at the individual level. Guzzo, et. al. (1993) defined group efficacy as an individual's belief that a group can perform successfully. Organizational efficacy serves a similar function to that of personal efficacy and operates through similar processes (Bandura, 2000).

Greenlees, et. al. (2000) studied organizational efficacy and goal setting, and found that the organizational efficacy which an individual possesses in their team will influence the goals they select for that team. Other researchers have found the same result (Silver and Bufanio, 1996; Durham, et. al., 1997; Knight, et. al., 2001; Quigley, 2003).

Durham, et. al. (1997) conducted an experiment in which they hypothesized that team efficacy, in addition to influencing the difficulty of the goals that the team sets for itself, also influences the commitment to that goal. In the experiment, the authors used a very similar scale to what was used in this research for measuring goal commitment (see the Goal Commitment section). They found that there was a significant correlation between team efficacy and goal commitment.

With the relationship between efficacy and goal selection and goal commitment documented by other researchers, a measure of the organization efficacy the participant perceives was included in the data gathered in the research questionnaire. A self-developed, single measure for organizational efficacy was used in this research, and is shown in Appendix C – The Questionnaire, labeled (OE).

### **9.3 Demographic Data**

Demographic data were gathered from the participants to be included as control variables to determine their significance. Those data were the respondents' gender and age.

## 10 GOAL COMMITMENT

Many models of environmental behavior show that intention immediately precedes behavior (Ajzen and Fishbein, 1980; Hines et al., 1986; Ajzen, 2001; Armitage and Conner, 2001). As a measure of intention, I will use the construct goal commitment developed by Hollenbeck, et. al. (1989) and modified by Klein, et. al. (2001) as the dependent variable. Goal commitment is defined as “one’s determination to reach a goal” (Locke & Latham, 1990). The conception of goal commitment is the intention to extend effort toward attaining the goal, persistence in pursuing the goal over time, and an unwillingness to lower or abandon that goal (Hollenbeck & Klein, 1987).

In 1989, Hollenbeck, et. al. sought to develop an “efficient, construct-valid measure of goal commitment.” This was in response to goal commitment measurement inconsistency and the use of single item measures. Hollenbeck, et. al. developed a nine item scale (HWK scale) that showed significant reliability and was consistently related to performance. This scale and its derivatives became the most commonly used measures of goal commitment (Klein, et. al., 2001).

Despite this wide use, some researchers raised questions about the dimensionality of the scale. To address this issue, Klein, et. al. (2001) conducted research with a combination of meta-analysis and structural equation analyses to assess the HWK scale. The goal was to identify a “unidimensional measure of goal commitment” that was “construct valid and demonstrated appropriate psychometric properties that researchers could confidently use.” Additional



considerations relevant to the focus of this research was to ensure that the scale produced equivalent results across tasks of varying complexity, across the timing of the measurement, and across the origin of the goal (self or other party imposed) (Klein, et. al., 2001).

The research determined that a five-item scale subset of the original nine-item scale best represented a unidimensional measure of one's determination to reach a goal. The scale was concluded to be practically significant, psychometrically sound, construct relevant, robust, and widely generalizable. Regarding the equivalence of the scale with respect to measurement timing, goal origin, and task complexity, the scale was equivalent and unidimensional across subgroups of different levels of these variables (Klein, et. al., 2001). The measures are shown in Appendix B – The Questionnaire, labeled (GC).

## **11 RESEARCH METHODOLOGY**

### **11.1 Research Setting**

In this research, the participants were sophomore, junior and senior-level students at the Johnson College of Business at the University of South Carolina Upstate. There were 89 men, 59 women, and two not reporting their gender. The age range was 19 to 63, with a mean of 23.7 and a median of 22. Of the 150 participants, 17 were excluded from the analysis due to either not fully completing the questionnaire or failing the manipulation checks. A post hoc power analysis showed that this sample size provided 81% power to detect, at a significance level of 0.05, the contribution of a single independent variable with an effect size  $f^2$  of 0.06 (small effect size), adjusting for the contribution of the other terms in the model. The power to

detect an effect size  $f^2$  of 0.15 (medium effect size) was 99%. An analysis conducted when including the participants who did not fully complete the questionnaire or failed the manipulation checks produced similar results to that when those participants were excluded, showing that the results are robust to this exclusion.

## 11.2 Experimental Design

The experiment was a two fixed factor, full factorial design with each factor having two factor levels ( $2^2$  or  $2 \times 2$  design). This creates four combinations of the two factors and two factor levels. The two fixed factors are Construal Level Theory (CLT) and Small Wins Strategy (SWS) framing. There was a third random factor, Environmental Concern. Goal Difficulty, Organizational Efficacy, Gender and Age were included as control variables.

To create the four combinations of fixed factor levels, scenarios were written describing the construal level and the use or lack of use of small wins framing. The focus of the scenarios was the adoption of an environmental sustainability improvement project to meet the organization's environmental sustainability goal. The CLT factor was used to frame the timing of the environmental sustainability project, manipulating the psychological distance of the project. The SWS framing was used to manipulate the size and scope of the environmental sustainability project.

Participants were randomly assigned to one of the four scenarios with the constraint of approximately equal number of participants assigned to each of the four scenarios. Each participant read the assigned scenario describing the environmental sustainability goal and

initiative, and the approach to working on that initiative. The scenarios are shown in Appendix A – The Experimental Manipulations.

After reading the scenario, each participant answered a questionnaire about the scenario, about how they perceived the environmental sustainability issue, and how they think they would act if actually put in that circumstance. Imbedded in the questionnaire were the measures of environmental concern, goal difficulty, organizational efficacy, gender, age and goal commitment. The measures are shown in Appendix B – The Questionnaire.

### **Construal Level Factor Levels**

The two CLT factor levels framed the environmental sustainability issue in a high construal (psychologically distant) level and in a low construal (psychologically proximal) level. In the high construal level frame, the issues were described in temporally distant terms. In this framing, the participants were told that the project would start “Fall Semester.” Fall Semester was six months in the future, with an intervening summer break, from the time the experiment was conducted. In the low construal level frame, the issues were described in temporally proximal terms. In this framing, the participants were told that the project would start “Monday.” The experiment was conducted on more than one day, so “Monday” was a somewhat variable timeframe, but always at most a week away.

### **Small Wins Factor Levels**

The two SWS factor levels structured the environmental sustainability project approach with and without a small wins framework. In a small wins framework, the problem was defined such

that people feel that their capabilities exceed what is required for success. The solution was defined in terms that made the issue feel tangible and controllable. The project was defined as “small” and would focus on “one aspect” at the local college campus’ environmental performance. Participants were told that, if successful, “the project will make a small improvement in the university systems’ environmental performance, but will lay the foundation for more sustainability projects that will eventually have an impact throughout the system.”

Without a small wins framework, the problem was defined such that people feel the scope of the problem and its solution is very large, perhaps exceeding their and the organization’s capabilities. This approach is the typical manner in which environmental problems are communicated in an effort to motivate people to act. In this research, for the framing without small wins, the project was defined as “very large” and focused on “all aspects of environmental performance.” The strategy was said to focus the project on “environmental problems in all universities and all colleges” in the South Carolina University System in order to “make a large improvement in the university systems’ environmental performance.”

### **Experiment Design Matrix**

To better illustrate the structure of the experiment, below is a table of the four factor combinations.

Treatment Combination	Construal Level	Small Wins
1	Low Construal	Using SWS
2	High Construal	Using SWS
3	Low Construal	Not Using SWS
4	High Construal	Not Using SWS

Table 2 - Experiment Design Matrix

### Environmental Concern

One random factor was included in the experimental design, environmental concern. Each participant's environmental concern was measured using the New Environmental Paradigm (NEP) scale developed by Dunlap et al. (2000). The participants' level of environmental concern was not determined *a priori*, and so could not be used to make assignments to the four scenarios. Given the sample size of 133 participants, it was determined *post facto* that there was sufficient power (81% for  $f^2$  of 0.06 and 99% for  $f^2$  of 0.15) to test hypotheses associated with environmental concern.

## 12 DATA ANALYSIS

SPSS Statistics software, Version 19 was used for the data analysis.

### 12.1 Evaluation of the Constructs

There are three constructs obtained from the literature and used in this research, Goal Commitment, Goal Difficulty, and Environmental Concern. All of the constructs were evaluated together in one factor analysis. As can be seen in Table 5 - Factor Analysis with All Constructs in

Appendix D, the Goal Commitment construct measures loaded together and the Goal Difficulty constructs loaded together. The measures for these two constructs loaded separately from each other, showing good discrimination. However, the Environmental Concern construct did not load as expected. Each construct's factor analysis and reliability analysis is discussed below.

### **12.1.1 Environmental Concern**

The Environmental Concern construct, taken from Dunlap et al. (2000), is intended to be a five factor formative construct, with each factor being composed of three reflective measures, resulting in fifteen total measures. Each of the five factors has a different environmental focus: 1) the balance of nature (belief that human activities impact the balance of nature), 2) limits to growth (belief that the earth has limited resources), 3) anti-exemptionalism (belief that human beings are not exempt from the constraints of nature), 4) anti-anthropocentrism (belief that human beings do not have the right to modify and control the natural environment), and 5) eco-crisis (belief that humans are causing harm to the physical environment). The measures are shown in Appendix B – The Environmental Concern Construct.

As was discussed in Section 7 Environmental Concern, some researchers have noted problems with this intended loading. Given the lack of empirical evidence supporting the scale's intended factor loadings, it should not be surprising, therefore, that the findings of my research are inconsistent with the previous studies.

As can be seen in the initial factor analysis, Table 6 - Environmental Concern Construct Factor Analysis in Appendix D – Evaluating the Constructs, the measures do not load as intended by

the developers of this construct. Note that only one of the five factors loads as intended, “eco-crisis.” It is a three-measure, reflective construct with measures 9, 12 and 15. These measures load into one factor, with a Cronbach’s Alpha of 0.697 and a total variance explained of 62.7%, and were used to measure environmental concern. The appeal of formulating the environmental concern construct in this manner is primarily three-fold:

- It matches one of the factors, Eco-crisis, in the measure from literature.
- It matches my conceptualization of environmental concern.
- It is a reflective measure.

For this research, the environmental concern construct was comprised of the following three reflective measures:

- Humans are severely abusing the environment.
- The so-called "ecological crisis" facing humankind has been greatly exaggerated.
- If things continue on their present course, we will soon experience a major ecological catastrophe.

### **12.1.2 Goal Difficulty**

The Goal Difficulty construct, taken from Wright (2004), is intended to be a four factor reflective construct. The measures are shown in Appendix C – The Questionnaire, labeled (GD), and the factor analysis is shown in Table 8 - Goal Difficulty Construct Factor Analysis. The four measures are reflective, and load into one factor with a Cronbach’s Alpha of 0.683 and a total

variance explained of 50.7%. Therefore, for this research, the four measure, reflective construct was used.

### **12.1.3 Goal Commitment**

The Goal Commitment construct, taken from Klein, et. al. (2001), is intended to be a five factor reflective construct. The measures are shown in Appendix C – The Questionnaire, labeled (GC). The five measures are reflective and loaded into one factor. This can be seen in the factor analysis results in Table 7 - Goal Commitment Construct Factor Analysis in Appendix D – Evaluating the Constructs. The Cronbach’s Alpha was 0.787 with a total explained variance of 55.5%. Note that the Cronbach’s Alpha would be slightly increased to 0.811 by excluding the second measure. However, since the five-measure construct matches literature and has a high Cronbach’s Alpha value, all five measures were retained for this research.

## **12.2 Evaluation of the Model**

The data were imported into SPSS. The constructs were calculated as defined in the last section. The non-dichotomous independent and control variables were mean-centered to reduce the effect of multicollinearity that may be present. Lastly, the interaction terms were calculated.

Hierarchical regression was used, and the factors were loaded in three stages, the control variables first (goal difficulty, organizational efficacy, gender and age), the main effects second (construal level, small wins framing, and environmental concern), and the interactions third



(the three two-way interactions between each of the three independent variables). The results of the regression can be seen in Table 3 - Hierarchical Regression Results.

In Model 1, the hierarchical model was evaluated for the significance of the control variables. Goal difficulty was removed in Model 1a due to lack of significance, and then age was removed in Model 1c. Organizational efficacy and gender were retained.

In Model 2, the hierarchical model was evaluated for the significance of the factor main effects. Only environmental concern was significant. However, CLT and SWS were retained because they were involved in interactions.

In Model 3, the hierarchical model was evaluated for the significance of the interactions. The Construal Level x Small Wins interaction was not significant and was removed in Model 3b. The other two interactions, Environmental Concern x Construal Level and the Environmental Concern x Small Wins were significant. Below is a summary of the model and the coefficients. Note that when the interaction terms were added to the model, the environmental concern main effect is no longer significant.

An Experiment on the Effect of Construal Level and Small Wins Framing on Environmental Sustainability Goal Commitment

	Model 1a	Model 1b	Model 1c	Model 2a	Model 3a	Model 3b
<b>Block 1 – Control Variables</b>						
Goal Difficulty	0.009					
Age	0.036	0.036				
Organizational Efficacy	0.394***	0.394***	0.399***	0.365***	0.368***	0.365***
Gender	0.557**	0.575**	0.541**	0.464**	0.491**	0.458**
<b>Block 2 – Main Effects</b>						
Environmental Concern				0.202**	-0.131	-0.117
Construal Level				-0.136	0.014	-0.102
Small Wins				-0.038	0.131	0.020
<b>Block 3 – Interaction Effects</b>						
Environmental Concern x Construal Level					0.427***	0.418***
Environmental Concern x Small Wins					0.267*	0.265*
Construal Level x Small Wins					-0.219	
<b>Model Fit Statistics</b>						
Adjusted R <sup>2</sup>			0.251	0.286		0.350
Δ Adjusted R <sup>2</sup>			0.251	0.035		0.064
ΔF			22.725	3.120		7.044
Significance of the ΔF			0.000	0.028		0.001

\*P Value < 0.05

\*\*P Value < 0.01

\*\*\*P Value < 0.001

**Table 3 - Hierarchical Regression Results**

At the bottom of Table 3, one can see the effect of going from Model 1 to Model 2 to Model 3 in terms of change in Adjusted R<sup>2</sup>, change in F, and the significance of that change in F. The change in each model is significant. As can be seen in the concluding Model 3b, 35% of the variance in goal commitment can be explained by the model.

### 13 RESULTS

The result of the hierarchical regression yields the following regression equation:

$$Y = 4.592 + 0.365X_{OE} + 0.458X_{Gender} - 0.117X_{EC} - 0.102X_{CLT} + 0.020X_{SWS} + 0.418X_{EC}X_{CLT} + 0.265X_{EC}X_{SWS}$$

To better understand the nature and significance of the interaction terms, simple slopes analyses were performed.

#### 13.1 Interaction Terms, Simple Slopes Analysis and Interaction Graphs

The simple slope analysis evaluates the  $X_{EC}X_{CLT}$  and  $X_{EC}X_{SWS}$  interaction terms at three different levels of standardized environmental concern (-1, 0 and +1 standard deviations from the mean).

Below are the calculated slopes, and P values. The slopes at -1 and +1 standard deviations are seen to be significant.

Slopes			P Values		
	CLT	SWS		CLT	SWS
<b>EC = -1</b>	-0.401	-0.299	<b>EC = -1</b>	0.000	0.003
<b>EC = 0</b>	0	0	<b>EC = 0</b>	0.999	0.999
<b>EC = 1</b>	0.401	0.299	<b>EC = 1</b>	0.000	0.003

Table 4 - Simple Slopes

The interaction graphs are very similar for the two independent variables. At high levels of environmental concern, moving from low to high construal, or moving from not using to using small wins, results in an increase in commitment to the environmental sustainability improvement initiative, and thus to meeting the organization’s environmental sustainability goal. This is consistent with the expected effects of these two factors. At low levels of

environmental concern, moving from low to high construal, or moving from not using to using small wins, results in a reduction in commitment to the environmental sustainability improvement initiative. This is contrary to the expected effects of these two factors.

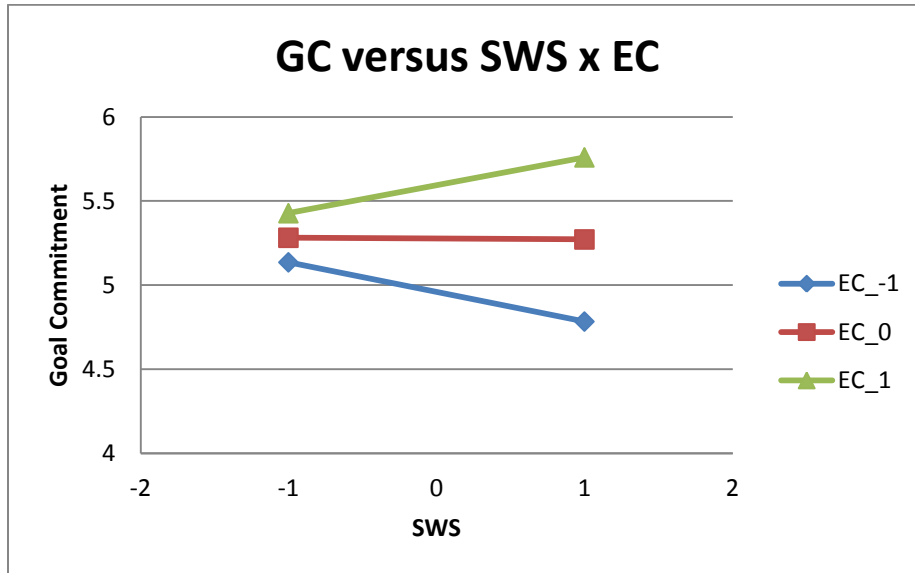


Figure 1- EC x SWS Interaction Graph

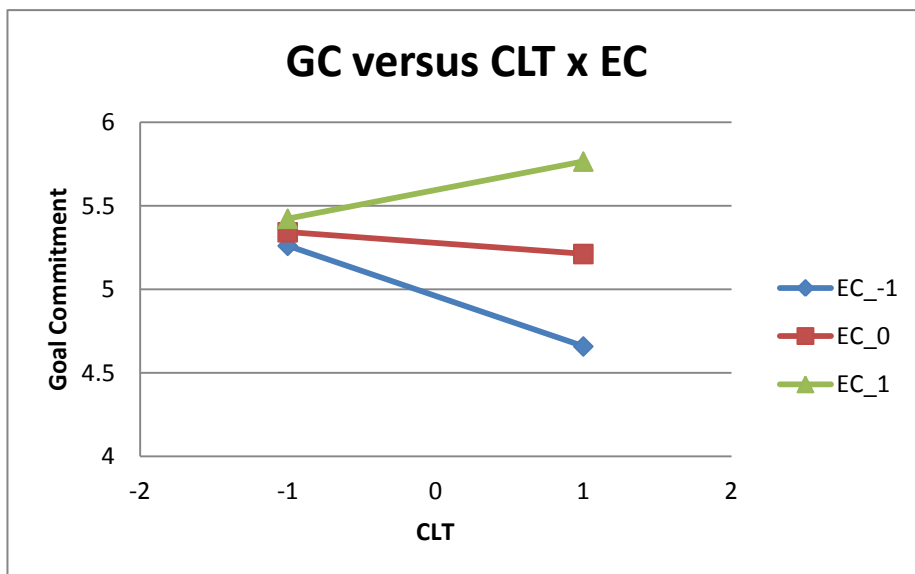


Figure 2 - EC x CLT Interaction Graph

It is interesting to note that the effect of construal level and the effect of small wins framing are very similar. This is consistent with expectations, that the high construal and use of small wins would have similar effects on goal commitment. It is also interesting to note there is very weak to no main effects for these two factors. Both are significant in combination with environmental concern. It was expected that environmental concern would moderate the effects of both construal level and small wins framing.

What is entirely unexpected is that at low levels of environmental concern, rather than the effects of construal level and small wins having a reduced or no effect, they have a negative effect. In other words, at low levels of environmental concern, the effects of construal level and small wins have an effect opposite from expectations, that the lower levels of these factors elicit higher levels of goal commitment.

For clarity, below is the expected interaction graph for the  $X_{EC}X_{CLT}$  interaction. The  $X_{EC}X_{SWS}$  interaction graph would look the same. It was expected that at low levels of environmental concern, the high level (relative to low level) of both construal level and small wins would have a positive effect on goal commitment, or at a minimum, no effect on goal commitment. As environmental concern increased, the positive effect of the high level (relative to low level) of both construal level and small wins would increase.

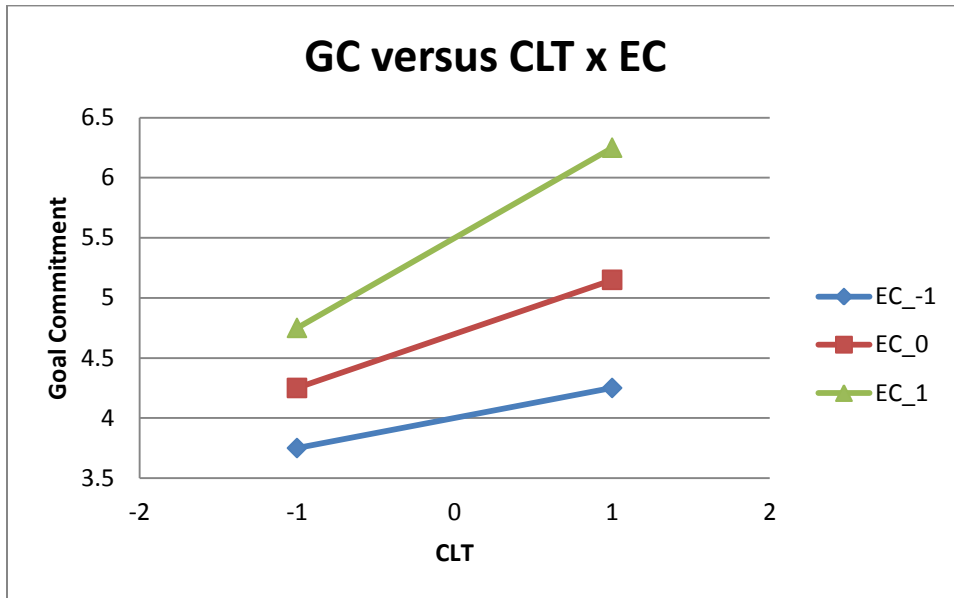


Figure 3 - Hypothetical Interaction Graph of "Anticipated" Results

### 13.2 Other Regression Terms

Looking at the other significant terms in the model, organizational efficacy has the largest effect on goal commitment of any of the variables over the organizational efficacy range observed.

This is a surprising result, that the largest determinant of goal commitment was the participants' perception of the organizations capability to meet the goal. This should have significant implications in both research and practice. Gender was also significant, with females providing a higher level of goal commitment.

It is also interesting to note that the mean level of goal commitment was 5.24, about a quarter of the way between "slightly agree" and "agree" with statements in support of the goal. This

indicates a general bias in the participants to support the environmental sustainability improvement goal.

It is also interesting to note those terms in the initial model that did not prove to be significant. Goal difficulty, age, and the  $X_{CLT}X_{SWS}$  interaction terms were not significant. It was expected that goal difficulty might influence the level of goal commitment, but this was not the case. Age was not significant (P value = 0.08), but the population sampled was very similar in age, with the mean = 23.4, the median = 22 and the 75<sup>th</sup> percentile = 24. It is possible that a set of participants more dispersed over the range of ages typical to most organizations might have generated a significant age effect. Lastly, there was not a significant interaction between CLT and SWS. I did not hypothesize the presence or lack of such an interaction, but I did recognize its potential and included it in the initial model, and it is interesting to note that this term was not close to significance (P value = 0.52).

### 13.3 Evaluation of the Hypotheses

The first hypothesis stated:

H<sub>1</sub>: Environmental sustainability initiatives that are framed in a psychologically distal manner will elicit higher levels of goal commitment.

This hypothesis was not supported as there was no direct effect of construal level on goal commitment. However, there was a significant interaction between construal level and environmental concern. At higher levels of environmental concern, psychologically distal

framing elicited higher levels of goal commitment. However, at lower levels of environmental concern, psychologically distal framing elicited lower levels of goal commitment.

The second hypothesis stated:

H<sub>2</sub>: Environmental sustainability initiatives that are framed in terms of small wins will elicit higher levels of goal commitment.

This hypothesis was not supported as there was no direct effect of small wins on goal commitment. However, there was a significant interaction between small wins and environmental concern. At higher levels of environmental concern, small wins framing elicited higher levels of goal commitment. However, at lower levels of environmental concern, small wins framing elicited lower levels of goal commitment.

The third hypotheses stated:

H<sub>3A</sub>: Individuals with a higher level of environmental concern will provide higher levels of goal commitment to environmental sustainability goals.

H<sub>3B</sub>: Environmental concern moderates the relationship between construal level and goal commitment for environmental sustainability goals. The effect of construal level will be greater at higher levels of environmental concern.

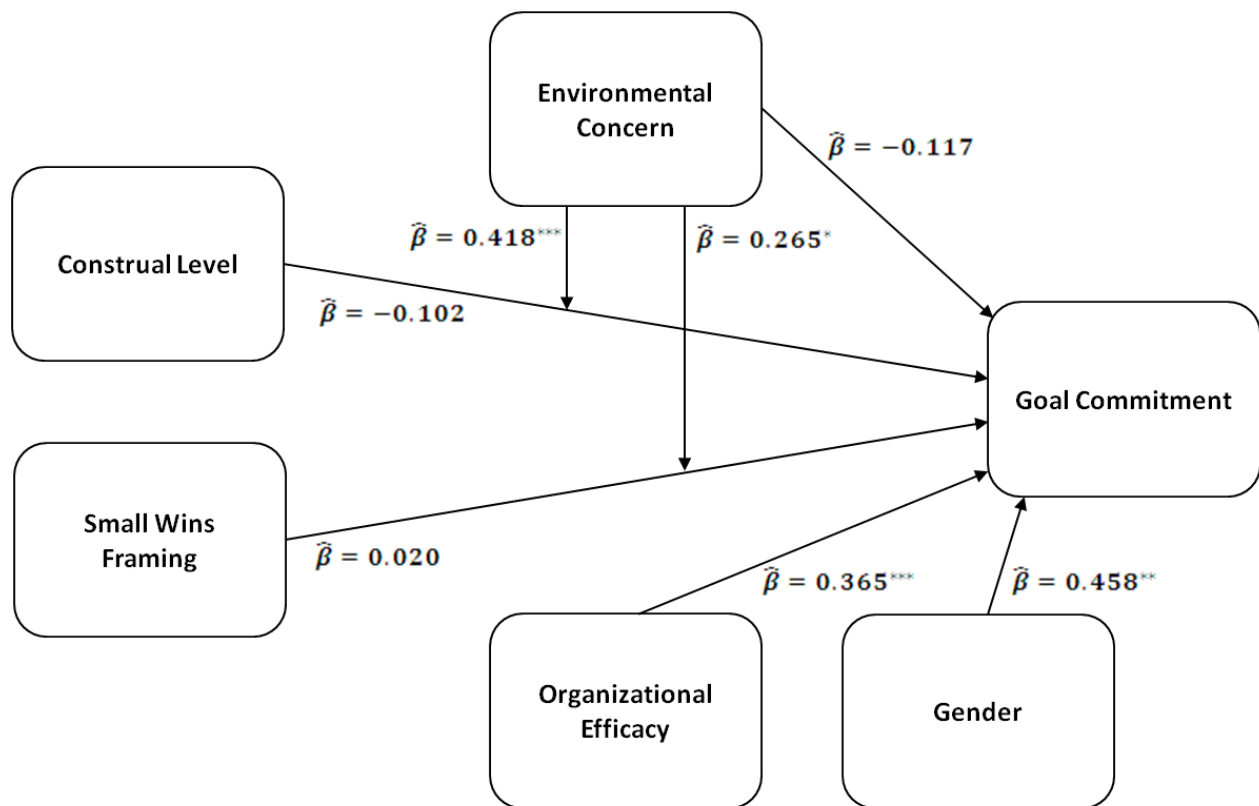
H<sub>3C</sub>: Environmental concern moderates the relationship between small wins framing and goal commitment for environmental sustainability goals. The effect of small wins will be greater at higher levels of environmental concern.



Hypothesis H<sub>3A</sub> was not supported. In Model 2, when environmental concern was introduced, it was strongly significant (P Value = 0.000). However, when the two interaction terms that involved environmental concern were introduced, the main effect was no longer significant. These two interaction terms are significant, so hypotheses H<sub>3B</sub> and H<sub>3C</sub> were confirmed.

### 13.4 Modified Model

The resulting model can be diagramed thusly:



\*p < 0.050; \*\*p < 0.01, \*\*\*p < 0.001

## 14 DISCUSSION AND CONCLUSIONS

Almost all of the independent variables and control variables studied had some effect on the participants' willingness to commit to the environmental sustainability goal. However, the combination of effects was more complex than anticipated. In particular were the effects of construal level and small wins. It was hypothesized that there would be a main effect of construal level such that increasing the construal level would elicit higher goal commitment. There was no such main effect. Similarly, it was hypothesized that there would be a main effect of small wins framing such that using small wins and decreasing the project size would elicit higher goal commitment. There too was no such main effect.

Construal level and small wins both had effects on goal commitment, but those effects were moderated by environmental concern. In other words, construal level and small wins effects were significant in an interaction with environmental concern.

For participants with a high level of environmental concern, both increasing construal level and using small wins increased goal commitment, as hypothesized. A high level of project construal (temporally distant) elicited higher levels of goal commitment versus low levels of project construal (temporally near). I hypothesized that the high level of construal would tap into the participants' environmental values, and participants with high environmental values would be more motivated to support an environmental sustainability goal.

Similarly, the use of small wins (small project) elicited higher goal commitment versus not using small wins (large project). I hypothesized that making a project small and more feasible would

elicit higher goal commitment. These effects are important, both confirming theories and as insights on how to approach meeting environmental sustainability goals.

However, for participants with a low level of environmental concern, the effects of increasing construal level and using small wins were to reduce goal commitment. While I anticipated that the effects would be smaller than that of participants with high environmental concern, had the hypothesized main effects of those factors been present, a high construal and a small wins approach would still elicit more goal commitment than a low construal and without a small wins approach.

However, the high level of project construal (temporally distant) elicited lower levels of goal commitment versus low levels of project construal (temporally near). Similarly, the use of small wins (small project) elicited lower goal commitment versus not using small wins (large project). What elicited the highest level of goal commitment for the participants with lower levels of environmental concern was the low levels of project construal (temporally near) and not using small wins (large project). This combination is a large, system-wide project starting immediately. It is unclear why these effects were found. Why, if you were lower on the environmental concern scale, would either pushing the start time out six months, or reducing the size and scope of the project, reduce the level of goal commitment?

Perhaps it is because, as mentioned in CLT and Evaluation section, extending the start time significantly (intertemporal discounting) or reducing the size and scope of the project both reduce the immediate impact of the project. People without a high level of environmental

concern may want a large, immediate effect for their effort, and high construal and small wins therefore reduced the willingness of the participants to contribute. Small wins framing is supposed to overcome being too far into the stress region of the YD curve. Perhaps people with low environmental concern do not feel the stress of the project in the same way people high in environmental concern do. It is not clear why these were the results, and this will warrant future research.

Ultimately, these results point to the fact that there may be a great disparity in the response people have to environmental sustainability projects depending on their level of environmental concern. I thought that the high level of CLT and use of Small Wins would tap into whatever level of environmental sustainability values the person has. That appears not to be the case. People with low levels of environmental concern reacted very differently to the environmental sustainability project versus people with high levels of environmental concern.

If an organization is fairly homogenous with regard to environmental sustainability concern, the approach may be clear from this research. For example, if the whole organization has a high level of environmental concern such as in self-selecting outdoors clubs or local chapters of environmental organizations, then a high construal level and a small wins approach may be very effective. If an organization has everyone with a low level of environmental concern, then the reverse approach is indicated. If the organization is diverse with regard to environmental concern, then some segregation of participants and diversity of approaches may be indicated.

## **15 IMPLICATIONS AND CONTRIBUTIONS**

### **15.1 Implications for Theory**

This research has the potential to contribute to the application of each of the theories corresponding to the independent variables in the experiment - Construal Level Theory, Small Wins Framing and Environmental Concern.

#### **15.1.1 Contribution to the Application of Construal Level Theory**

Construal Level Theory has primarily been used in consumer marketing as in Fujita, Eyal, Chaiken, Trope, and Liberman (2008). With this research, CLT is being applied in a novel way to framing and persuading people to make values-centered decisions. As Fujita et al. (2008) state, “there has been little research examining directly whether the temporal distance of an attitude object affects persuasion processes,” and I have found no research on how construal level affects goal commitment or eliciting employee project commitment.

#### **15.1.2 Contribution to the Application of Small Wins Strategy**

Contrary to typical environmental messages, the Small Wins Strategy says to redefine large problems as a set of smaller problems. SWS has been applied to developing environmental sustainability strategies, but the use in SWS in communicating and eliciting commitment is novel. I also have found no research that combines both CLT and SWS.

#### **15.1.3 Contribution to the Use of Environmental Concern**

When advocating for support for environmentally sustainable behaviors, targeting people with greater environmental concern is common, though the level of environmental concern is not

typically formally measured. The use of the NEP Scale as a general measure of environmental concern is well-established and the scales have been shown to discriminate between environmentalists and non-environmentalists in many cultures (Hawcroft and Milfont, 2010). The use of this construct in this research will contribute to the understanding of advocating environmental sustainability initiatives and behaviors to people of differing environmental concern levels. The results of the factor analysis and the poor loading of the measures may inform future use of this instrument.

## **15.2 Implications for Practice**

The focus of this research is on framing environmental sustainability projects motivating employees to support the project's goals. This research has the potential to increase the effectiveness of the project development and eliciting employee support, and therefore the effectiveness of companies' environmental sustainability initiatives.

In the specific context of environmental sustainability initiatives, framing the focus at a high-level construal and using small wins is counter to current approaches, so this research has the potential to profoundly affect the approach to environmental advocacy.

Research on environmental sustainability communication has particularly focused on consumers (e.g.: Gatersleben et al, 2002; Leiserowitz, et. al., 2006; Abrahamse et al, 2005; Bamberg, 2002; Urie and Kilbourne, 2011). This research will contribute to the understanding of advocating to people outside the consumer context. This research can be generalized

beyond a corporate organization context to any type of organization, and indeed, to any type of citizen advocacy.

One interesting result is the significance of organizational efficacy to goal commitment. The implication of this is that to elicit the support of potential project participants, effort should be made to develop the organization capability in the project area, and to communicate that capability effectively.

Lastly, females were found to provide great commitment than males. This may have implications for organizations.

## **16 LIMITATIONS AND FUTURE RESEARCH**

In this research, the limitations are primarily related to generalizability due to choice of participants. The participants were students at the University of South Carolina Upstate. The intention is to be able to generalize the results to a general audience, and in particular, to typical employee populations.

Another limitation of this research is the lack of age diversity in the sample. Age was nearly significant in the regression results, and a sample with a range of ages more representative of typical organizations may detect an important factor.

Lastly, future research is warranted to understand why some results were counter to hypotheses. A potential research design would be to include questions asking why the

participant responded in the manner he or she did, or combine a quantitative questionnaire with qualitative interviews.



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## 18 APPENDIX A – THE EXPERIMENTAL MANIPULATIONS

### Introduction

Reducing environmental impact is becoming more and more important to organizations. The South Carolina University system is no exception. South Carolina University System President Dr. Harris Pastides wants to assess how much student support we could get to work on environmental improvement projects at each of the eight university system campuses. Please read the following note from Dr. Pastides and complete the questionnaire. Your responses will be anonymous because our investigation is preliminary, but please answer the questions as though you are making a real commitment so that the results of our study will be accurate.

A note from South Carolina University System President Dr. Harris Pastides:

The leadership of the South Carolina University System has decided that all the universities in the system should adopt the goal of improving the environmental impact of their campus operations. However, we recognize that meeting this goal will be successful only if students such as you are willing to spend time on environmental improvement activities.

### CLT – High

We are organizing an environmental sustainability project to reach our goal of improving the environmental impact of our campuses' operations. The project will start in the **Fall Semester**. If you choose to participate, you can commit as many hours a week as you would like. Be aware that if you choose to participate, we are asking that you commit a fixed amount of time each week, beginning **Fall Semester**. If you will not be enrolled in the Fall Semester, answer the questions as you would if were enrolled.

### CLT – Low

We are organizing an environmental sustainability project to reach our goal of improving the environmental impact of our campuses' operations. The project will start **this coming Monday (March 19)**. If you choose to participate, you can commit as many hours a week as you would like. Be aware that if you choose to participate, we are asking that you commit a fixed amount of time each week, beginning **this coming Monday (March 19)**.

SWS – With

The approach we have chosen is to start with a **small project** focused on just **one aspect** of environmental performance. The strategy is to focus on an environmental problem in one college (the USC Upstate College of Business). As such, the solution to the environmental problem can be tailored to your college's operations. If successful, the project will make a small improvement in the university systems' environmental performance, but will lay the foundation for more sustainability projects that will eventually have an impact throughout the system.

SWS – Without

The approach we have chosen is to start with a **very large project** focused on **all aspects** of environmental performance. The strategy is to focus on environmental problems in all universities and all colleges, and as such, the approaches to the university systems' environmental problems will be the same across the university system. While risky, if successful, the project will make a large improvement in the university systems' environmental performance.

Close

Will you volunteer to work on the project to meet our environmental sustainability goal? The more time you commit, the more likely it will be that we successfully complete the project and meet our goal.

Please thoughtfully read and answer each item in the following questionnaire. Through this research, we hope to better understand how students in the University of South Carolina system make decisions about volunteering for environmental improvement projects.



### 18.1.1 Treatment Combination One (Low Construal / Using SWS)

<p>Reducing environmental impact is becoming more and more important to organizations. The South Carolina University system is no exception. South Carolina University System President Dr. Harris Pastides wants to assess how much student support we could get to work on environmental improvement projects at each of the eight university system campuses. Please read the following note from Dr. Pastides and complete the questionnaire. Your responses will be anonymous because our investigation is preliminary, but please answer the questions as though you are making a real commitment so that the results of our study will be accurate.</p> <p>A note from South Carolina University System President Dr. Harris Pastides: The leadership of the South Carolina University System has decided that all the universities in the system should adopt the goal of improving the environmental impact of their campus operations. However, we recognize that meeting this goal will be successful only if students such as you are willing to spend time on environmental improvement activities.</p>	<p>Introduction</p>
<p>We are organizing an environmental sustainability project to reach our goal of improving the environmental impact of our campuses' operations. The project will start <b><u>this coming Monday (March 19)</u></b>. If you choose to participate, you can commit as many hours a week as you would like. Be aware that if you choose to participate, we are asking that you commit a fixed amount of time each week, beginning <b><u>this coming Monday (March 19)</u></b>.</p>	<p>Low Construal Level</p>
<p>The approach we have chosen is to start with a <b><u>small project</u></b> focused on just <b><u>one aspect</u></b> of environmental performance. The strategy is to focus on an environmental problem in one college (the USC Upstate College of Business). As such, the solution to the environmental problem can be tailored to your college's operations. If successful, the project will make a small improvement in the university systems' environmental performance, but will lay the foundation for more sustainability projects that will eventually have an impact throughout the system.</p>	<p>Using SWS</p>
<p>Will you volunteer to work on the project to meet our environmental sustainability goal? The more time you commit, the more likely it will be that we successfully complete the project and meet our goal.</p> <p>Please thoughtfully read and answer each item in the following questionnaire. Through this research, we hope to better understand how students in the University of South Carolina system make decisions about volunteering for environmental improvement projects.</p>	<p>Close</p>

### 18.1.2 Treatment Combination One (Low Construal / Using SWS)

<p>Reducing environmental impact is becoming more and more important to organizations. The South Carolina University system is no exception. South Carolina University System President Dr. Harris Pastides wants to assess how much student support we could get to work on environmental improvement projects at each of the eight university system campuses. Please read the following note from Dr. Pastides and complete the questionnaire. Your responses will be anonymous because our investigation is preliminary, but please answer the questions as though you are making a real commitment so that the results of our study will be accurate.</p> <p>A note from South Carolina University System President Dr. Harris Pastides:          The leadership of the South Carolina University System has decided that all the universities in the system should adopt the goal of improving the environmental impact of their campus operations. However, we recognize that meeting this goal will be successful only if students such as you are willing to spend time on environmental improvement activities.</p>	<p>Intro- duction</p>
<p>We are organizing an environmental sustainability project to reach our goal of improving the environmental impact of our campuses' operations. The project will start <b><u>this coming Monday (March 19)</u></b>. If you choose to participate, you can commit as many hours a week as you would like. Be aware that if you choose to participate, we are asking that you commit a fixed amount of time each week, beginning <b><u>this coming Monday (March 19)</u></b>.</p>	<p>Low Construal Level</p>
<p>The approach we have chosen is to start with a <b><u>very large project</u></b> focused on <b><u>all aspects</u></b> of environmental performance. The strategy is to focus on environmental problems in all universities and all colleges, and as such, the approaches to the university systems' environmental problems will be the same across the university system. While risky, if successful, the project will make a large improvement in the university systems' environmental performance.</p>	<p>Without Using SWS</p>
<p>Will you volunteer to work on the project to meet our environmental sustainability goal? The more time you commit, the more likely it will be that we successfully complete the project and meet our goal.</p> <p>Please thoughtfully read and answer each item in the following questionnaire. Through this research, we hope to better understand how students in the University of South Carolina system make decisions about volunteering for environmental improvement projects.</p>	<p>Close</p>

### 18.1.3 Treatment Combination One (Low Construal / Using SWS)

<p>Reducing environmental impact is becoming more and more important to organizations. The South Carolina University system is no exception. South Carolina University System President Dr. Harris Pastides wants to assess how much student support we could get to work on environmental improvement projects at each of the eight university system campuses. Please read the following note from Dr. Pastides and complete the questionnaire. Your responses will be anonymous because our investigation is preliminary, but please answer the questions as though you are making a real commitment so that the results of our study will be accurate.</p> <p>A note from South Carolina University System President Dr. Harris Pastides:          The leadership of the South Carolina University System has decided that all the universities in the system should adopt the goal of improving the environmental impact of their campus operations. However, we recognize that meeting this goal will be successful only if students such as you are willing to spend time on environmental improvement activities.</p>	<p>Intro- duction</p>
<p>We are organizing an environmental sustainability project to reach our goal of improving the environmental impact of our campuses' operations. The project will start in the <b>Fall Semester</b>. If you choose to participate, you can commit as many hours a week as you would like. Be aware that if you choose to participate, we are asking that you commit a fixed amount of time each week, beginning <b>Fall Semester</b>. If you will not be enrolled in the Fall Semester, answer the questions as you would if were enrolled.</p>	<p>High Construal Level</p>
<p>The approach we have chosen is to start with a <b>small project</b> focused on just <b>one aspect</b> of environmental performance. The strategy is to focus on an environmental problem in one college (the USC Upstate College of Business). As such, the solution to the environmental problem can be tailored to your college's operations. If successful, the project will make a small improvement in the university systems' environmental performance, but will lay the foundation for more sustainability projects that will eventually have an impact throughout the system.</p>	<p>Using SWS</p>
<p>Will you volunteer to work on the project to meet our environmental sustainability goal? The more time you commit, the more likely it will be that we successfully complete the project and meet our goal.</p> <p>Please thoughtfully read and answer each item in the following questionnaire. Through this research, we hope to better understand how students in the University of South Carolina system make decisions about volunteering for environmental improvement projects.</p>	<p>Close</p>

### 18.1.4 Treatment Combination One (Low Construal / Using SWS)

<p>Reducing environmental impact is becoming more and more important to organizations. The South Carolina University system is no exception. South Carolina University System President Dr. Harris Pastides wants to assess how much student support we could get to work on environmental improvement projects at each of the eight university system campuses. Please read the following note from Dr. Pastides and complete the questionnaire. Your responses will be anonymous because our investigation is preliminary, but please answer the questions as though you are making a real commitment so that the results of our study will be accurate.</p> <p>A note from South Carolina University System President Dr. Harris Pastides:          The leadership of the South Carolina University System has decided that all the universities in the system should adopt the goal of improving the environmental impact of their campus operations. However, we recognize that meeting this goal will be successful only if students such as you are willing to spend time on environmental improvement activities.</p>	<p>Intro- duction</p>
<p>We are organizing an environmental sustainability project to reach our goal of improving the environmental impact of our campuses' operations. The project will start in the <b>Fall Semester</b>. If you choose to participate, you can commit as many hours a week as you would like. Be aware that if you choose to participate, we are asking that you commit a fixed amount of time each week, beginning <b>Fall Semester</b>. If you will not be enrolled in the Fall Semester, answer the questions as you would if were enrolled.</p>	<p>High Construal Level</p>
<p>The approach we have chosen is to start with a <b>very large project</b> focused on <b>all aspects</b> of environmental performance. The strategy is to focus on environmental problems in all universities and all colleges, and as such, the approaches to the university systems' environmental problems will be the same across the university system. While risky, if successful, the project will make a large improvement in the university systems' environmental performance.</p>	<p>Without Using SWS</p>
<p>Will you volunteer to work on the project to meet our environmental sustainability goal? The more time you commit, the more likely it will be that we successfully complete the project and meet our goal.</p> <p>Please thoughtfully read and answer each item in the following questionnaire. Through this research, we hope to better understand how students in the University of South Carolina system make decisions about volunteering for environmental improvement projects.</p>	<p>Close</p>

## 19 APPENDIX B – THE ENVIRONMENTAL CONCERN CONSTRUCT

Measurement	Survey Question
<b>Balance of Nature</b>	When humans interfere with nature, it often produces disastrous consequences.
	The balance of nature is very delicate and easily upset.
	The balance of nature is strong enough to cope with the impacts of modern industrial nations.
<b>Limits to Growth</b>	We are approaching the limit of the number of people the earth can support.
	The earth has plenty of natural resources if we just learn how to develop them.
	The earth is like a spaceship with very limited room and resources.
<b>Antiexemptionalism</b>	Human ingenuity will insure that we do NOT make the earth unlivable.
	Despite our special abilities, humans are still subject to the laws of nature.
	Humans will eventually learn enough about how nature works to be able to control it.
<b>Antianthropocentrism</b>	Plants and animals have as much right as humans to exist.
	Humans have the right to modify the natural environment to suit their needs.
	Humans were meant to rule over the rest of nature.
<b>Eco-crisis</b>	Humans are severely abusing the environment.
	The so-called "ecological crisis" facing humankind has been greatly exaggerated.
	If things continue on their present course, we will soon experience a major ecological catastrophe.

## 20 APPENDIX C – THE QUESTIONNAIRE

The questionnaire is below. After each question is a code denoting the construct measured or purpose of the question.

<b>Code</b>	<b>Purpose</b>
CLT or SWS	Verify the effect of the CLT or SWS factor on cognitive perception
EC	Environmental Concern Construct (Dunlap, et. al., 2000)
GC	Goal Commitment Construct (Klein, et. al., 2001)
GD	Goal Difficulty Construct (Wright, 2004)
PC	Single Measure of Project Commitment
TC	Single Measure of Time Commitment
OE	Single Measure of Perceived Organizational Efficacy
PersCom	Single Measure of Perceived Typical Personal Commitment

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**Please answer the following questions.**  
**Mark only one box for each numbered statement or question.**  
**Your responses are entirely anonymous.**

		Monday	Fall Semester					
1.	When will the project start? (CLT)	<input type="checkbox"/>	<input type="checkbox"/>					
		Small	Large					
2.	What is the size of the project the university system plans to implement to meet its environmental goal? (SWS)	<input type="checkbox"/>	<input type="checkbox"/>					
		Strongly Disagree	Disagree	Slightly Disagree	Neither Disagree Nor Agree	Slightly Agree	Agree	Strongly Agree
3.	I think the goal of improving the environmental impact of campus operations is a good one to shoot for. (GC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	It is hard to take the university system's goal of improving the environmental impact of campus operations seriously. (GC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Quite frankly, I don't care if the university system achieves the goal of improving the environmental impact of campus operations or not. (GC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	I am strongly committed to pursuing the goal of improving the environmental impact of campus operations. (GC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	It wouldn't take much to make me abandon the goal of improving the environmental impact of campus operations. (GC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	I would commit my time to the university system's proposed project to improve the environmental impact of campus operations. (PC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Per week, how many hours (or fractions of an hour) would you commit to working on the environmental improvement project to help make it successful? Give your answers in hours per week. (TC)							Hours per Week _____

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	Strongly Disagree	Disagree	Slightly Disagree	Neither Disagree Nor Agree	Slightly Agree	Agree	Strongly Agree
10. The goal of improving the environmental impact of campus operations is a difficult one. (GD)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The goal of improving the environmental impact of campus operations will require great effort. (GD)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The goal of improving the environmental impact of campus operations will require a high degree of know-how and problem solving skill. (GD)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The goal of improving the environmental impact of campus operations will require persistence and tenacity. (GD)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I think the university system has the capability to be successful in meeting its goal of improving the environmental impact of campus operations. (OE)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. When humans interfere with nature, it often produces disastrous consequences. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The balance of nature is very delicate and easily upset. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. We are approaching the limit of the number of people the earth can support. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Human ingenuity will insure that we do NOT make the earth unlivable. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The earth has plenty of natural resources if we just learn how to develop them. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Plants and animals have as much right as humans to exist. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Humans have the right to modify the natural environment to suit their needs. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Humans were meant to rule over the rest of nature. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Humans are severely abusing the environment. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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	Strongly Disagree	Disagree	Slightly Disagree	Neither Disagree Nor Agree	Slightly Agree	Agree	Strongly Agree
24. The balance of nature is strong enough to cope with the impacts of modern industrial nations. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Despite our special abilities, humans are still subject to the laws of nature. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. The so-called “ecological crisis” facing humankind has been greatly exaggerated. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. The earth is like a spaceship with very limited room and resources. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Humans will eventually learn enough about how nature works to be able to control it. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. If things continue on their present course, we will soon experience a major ecological catastrophe. (EC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. I am a person who tends to be committed to the strategic goals of organizations I am a member of. (PersCom)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. What is your gender?	Male <input type="checkbox"/>		Female <input type="checkbox"/>				
32. What is your age? _____							

**Thank you very much for your participation.**

**21 APPENDIX D – EVALUATING THE CONSTRUCTS**

	Component						
	1	2	3	4	5	6	7
GC1	.476						
GC2	.442						
GC3	.766						
GC4	.839						
GC5	.766						
GD1		.716					
GD2		.783					
GD3		.716					
GD4		.574					
EC15			.726				
EC9			.660				
EC12			.512				
EC13			.649				
EC3			.587				
EC5							-.751
EC6			.601				
EC7					.562	.436	
EC8						.606	
EC1				.816			
EC2				.696			
EC10					.440	.478	
EC14					.782		
EC4						.687	
EC11							.572

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

**Table 5 - Factor Analysis with All Constructs**

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	Component					Intended Factor Loadings
	1	2	3	4	5	
EC1		.870				Balance of Nature
EC2		.755				
EC10			.670			
EC3	.542	.466				Limits to Growth
EC5					.763	
EC13	.455	.501				
EC4				.837		Anti-exemptionalism
EC14			.819			
EC11	.439				-.590	
EC6	.650					Anti-anthropocentrism
EC7			.701			
EC8				.558		
EC9	.603					Eco-crisis
EC12	.656					
EC15	.804					

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

**Table 6 - Environmental Concern Construct Factor Analysis**

	Component
	1
GC4	.842
GC5	.829
GC3	.826
GC1	.623
GC2	.554

Table 7 - Goal Commitment Construct Factor Analysis

	Component
	1
GD2	.822
GD3	.708
GD1	.672
GD4	.623

Table 8 - Goal Difficulty Construct Factor Analysis