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Cooperative and Competitive Priming Impacts Participatory Environmental Action

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Abstract

Environmental issues are becoming increasingly prominent in today's psychological research. Some researchers identify cooperation as a possible underlying facilitator of proenvironmental values, or proenvironmentalism. However, previous studies had not directly addressed how manipulating cooperation and competition could influence environmentalism. This study addressed this gap in previous literature by cooperatively, competitively, or neutrally priming participants and comparing their respective environmental attitudes, environmental actions, and environmental identities. 155 participants were recruited from introductory psychology classes at Seton Hall University. Participants were randomly placed into one of three conditions and primed by writing a short passage regarding a significant personal experience acting either cooperatively, competitively, or neutrally. Subsequently, they took a battery of surveys to measure environmentalism. It was predicted that participants primed cooperatively would score the most proenvironmentally on the measures, those primed competitively would score least proenvironmentally, and those primed neutrally would score between the cooperatively and competitively primed groups. It was found that there was no significant difference in environmentalism based on the priming groups, and no significant difference among groups in each environmental measure: environmental action, environmental attitude, environmental identity. However, those in the cooperative priming group scored marginally higher on environmental action than people in the competitive priming group and the results indicated a significant difference by priming groups on participatory environmental action.

Keywords: Cooperation, Competition, Environmentalism, Priming

Introduction

The interest surrounding environmental issues is growing in today's psychological research. The conclusions drawn from these studies are becoming increasingly pertinent due to the potentially devastating outcomes of human environmental carelessness. As a species, humans can now affect global temperature and weather patterns rather than just local ecological systems. Overpopulation and unclean human practices have begun to affect the global ecological system (Gardner & Stern, 1996). Consequently, many creative and progressive solutions have been proposed to combat global environmental degradation. These solutions are often aimed at reducing the impact of an individual's daily environmentally related behaviors. Some recent studies have similarly focused upon these daily actions and choices (i.e. choice of daily transportation) (Kenis & Mathijs, 2012). Unfortunately, monetary obstacles and societal constraints often limit the real-world effectiveness of these efforts to alter daily behaviors (Gardner & Stern, 1996). These limitations have led some researchers to propose that our societies' environmental problems cannot be addressed through our current paradigms alone (Oskamp, 2000). An alternate theory suggests that the ability to work cooperatively within our societal structure is essential to achieving a healthier planet (Gärling, Fujii, Gärling, & Jakosson, 2003).

The relationship between cooperation, competition, and environmental issues are often modeled with social dilemmas. A social dilemma can be generally defined as a condition in which immediate individual or competitive interests and long-term cooperative interests are conflicting (Joireman, 2005). In the construct of a social dilemma, environmentally conscious individuals are viewed as cooperative and beneficial for both the environment (e.g. cleaner waterways) and the individual (e.g. cleaner water to drink). In contrast, less environmentally

conscious individuals are viewed as competitive and beneficial only to the individual (e.g. exploiting recourses for monetary gain), with the cost of environmental degradation (e.g. fish extinctions from overfishing) (Ostrom, 1990; Thompson & Stoutemyer, 1991). More specifically, environmental issues can be framed as a tragedy of the commons dilemma. A commons dilemma is an example of a social dilemma in which noncooperation between individuals will lead to deterioration and a possible collapse of a finite resource (Hardin, 1968). In this construct, each actor (e.g. an individual, a company, or a nation) will individually benefit from exploiting the environment/resource (self-gain) in the short term but will suffer over the long term if the environment degrades due to overexploitation by many. The classic example of a commons dilemma was introduced by Hardin (1968) which references community grazing land in small villages. In his scenario, local farmers individually benefit from short-term noncooperation (e.g. increased profits from owning a greater number of cows that graze on the finite community grass) but all suffer in the long-term once the grass has been totally and irreversibly consumed. Cooperation and competition are at odds in a commons dilemma as are short-term interests and long-term interests. This model is particularly useful because the impact of modern noncooperation regarding the environment may not take effect within this generation's lifespan, but instead during the lives of our children (Sparks, Jessop, Chapman, & Holmes, 2010). Resource dilemmas are commonly applied to other real-life environmental issues like water shortages (Thompson & Stoutemyer, 1991), overfishing (Gardner & Stern, 1996), and energy crises (Kempton, Darley, & Stern, 1992). Social dilemmas are discussed in greater detail in the following sections.

A possible strategy to encourage environmentalism could be to alter an individuals' tendency to cooperate with others. Cooperation is defined as two or more organisms working

together towards a common goal (Prentice & Sheldon, 2015). Cooperation seems to underlie many instances of environmentalism. In a recent study, Kaiser & Burka (2011) found that over ninety percent of their proenvironmental participants were cooperative. On the contrary, only nine percent of their proenvironmental participants were selfish. Social value orientation (SVO) research attempts to predict how people respond to social dilemmas based on their intrinsic values such as cooperativeness or competitiveness (Messick & Brewer, 1983). SVO research defines competition in social dilemmas as the desire to maximize one's own gain relative to another individual's personal gain (Messick & McClintock, 1968). Social value orientation research suggests cooperation is the willingness to sacrifice one's own personal gain to maximize joint gain (Kuhlman & Marshello, 1975). Several other previous studies have also established a relationship between cooperation/competition and environmentalism (Kramer, McClintock & Messick, 1986; Joireman, 2005; Zelenski et al., 2015).

To address the relationship between cooperation, competition and environmentalism, several major steps are taken in the coming sections. Firstly, environmentalism is explained within the context of related literature. Secondly, the underlying theories and research behind cooperation, competition and social dilemmas are discussed. Thirdly, any established relationships between cooperation, competition and environmentalism are determined. Fourthly, the major issues related to research in cooperation, competition and environmentalism research are identified. Finally, the current research is discussed.

Environmentalism

Environmentalism is a multifaceted and broad construct partially defined as the behavioral tendency to take actions involving proenvironmental commitments (Stern, 2000; Jia, Alisat, Soucie & Pratt, 2015; Jia, Soucie, Alisat, & Pratt, 2016). Researchers have also begun to

view environmentalism in terms of both environmental identity and ecological world view (Clayton, 2003; Dunlap, Van Liere, Mertig & Jones, 2000). Yet another line of research studies environmentalism through daily behaviors and practices (Stern, 2000). Considering how broadly environmentalism had been defined and operationalized in previous literature, a more specific approach needed to be taken. Therefore, this study examined environmentalism with three components; environmental action, environmental attitude, and environmental identity. These three components were identified by Jia et. al (2015) as a concise, yet well-rounded operational definition of environmentalism.

The component of environmentalism most central to this study is environmental action. Environmental action has been widely studied by psychologists since the mid 1950's. Due partially to the breath of research alone, many differing operational definitions have been employed that encompass a wide variety of environmental behaviors. Environmental action is often used interchangeably with the terms environmental behaviors and environmental activism (Dono, Webb, & Richardson, 2010). The previous ambiguity surrounding environmental action make it essential to tightly define its elements for the purposes of this study. Additionally, it is necessary to distinguish environmental action from the other closely related theories and definitions.

Recently, Alisat & Riemer (2015) defined environmental action as, "intentional and conscious civic behavior that is focused on the systematic causes of environmental problems and the promotion of sustainability through collective efforts." In their theory, environmental action is collective and cooperative. They developed a scale that measures levels of engagement in environmental actions extending from low-level civic action to highly engaged political or organizational action. Less involved civic actions could consist of something as simple as

searching for information on the internet regarding environmental issues. An example of a more highly involved action could be organizing a protest to bring awareness to environmental issues. Alisat & Riemer (2015) separate environmental action from everyday personal environmental behaviors. Perhaps the understanding that cooperation will yield a common good underlies many instances of proenvironmental action (Lubell, 2002). Similarly, Dono et al. (2010) make a distinction between environmental activism and everyday environmental practices based upon the collective nature of environmental action. Accordingly, this study adopted a division between environmental action and daily personal practices. This division is empirically based in research that suggests personal attempts to alter daily behaviors (i.e. buying a more energy efficient vehicle) to help the environment have been relatively unsuccessful (Kenis and Mathijs, 2012), and in research that argues meaningful environmental action is based in collective behaviors.

In addition, environmentalism is often studied by analyzing an individual's environmental attitude, otherwise known as their ecological world view. A person's ecological world view is defined by how they view environmental problems and which environmental issues they pay the closest attention to (Stern, Dietz& Guagnano, 1995). Dunlap et al. (2000) argue that environmental attitudes are a fundamental aspect of a person's greater worldview. Specifically, Dunlap et al. (2000) wish to understand peoples' "primitive beliefs" about society's relationship with the environment. The degree to which an individual's behavioral commitments and attitudes directly affect the environment is a much-debated subject (Stern, 2000). However, it is reasonable to postulate that the attitudes held by individuals will have at least a marginal mitigating effect on environmental degradation. It is essential to research every possible avenue of improving the human relationship to the environment due to the severe nature of human

environmental impact. Ecological world views are measured using a revised new ecological paradigm (NEP) scale that has been tailored to modern ecological issues and attitudes (Dunlap et al., 2000).

Environmental identity is the third component of environmentalism pertinent to this study. Clayton (2003) describes environmental identity as, "A sense of connection to some part of the nonhuman natural environment, based on history, emotional attachment, or similarity, that affects the ways in which we perceive and act toward the world; a belief that the environment is important to us and an important part of who we are." Others describe it as the psychological connection between oneself and the nonhuman environment (Schultz & Nolan, 2004; Stets & Biga, 2003). Identity theory is central to the idea of environmental identity. It is based upon the idea that one's identity influences an individual's attitudes and behaviors (Stryker, 1990). Two rival typologies of environmental identity appear in the literature. An individual with an ecocentric identity places the highest degree of respect on the needs of the environment while those with an anthropocentric identity view the environment as an expendable resource that is consumable for the needs of humans (Catton & Dunlap, 1980). Kashima, Paladino, and Margetts (2014) argue that those with strong environmental strivings (environmental identity) are likely to show a similar tendency to regard nature as closely associated with the sphere of human activities. Clayton (1996) proposes that a highly environmental identity is more compatible with collectivist ideals than with individualistic ideals. To determine environmental identity, many studies employ the "Thoughts About Nature" twelve-point Likert scale questionnaire which asks participants how relatable a series of environmental ideologies are to them (Clayton, 2003).

In this study, environmentalism was operationalized with three components; environmental action, environmental attitude and environmental identity. A person scoring

higher on the three components is considered more proenvironmental. A person scoring lower on these components is considered less proenvironmental. Many of the issues related to the physical environment can be viewed as social dilemmas in which proenvironmentalism is viewed as cooperative (pro-social) while anti-environmentalism is viewed as competitive (pro-selfish). More specifically, environmental protection is considered a tragedy of the commons social dilemma (Ostrom, 1990). In the next section, theories regarding cooperation/competition and social dilemmas are examined and relevant literature is discussed.

Social Dilemmas and Cooperation/Competition

Research on cooperation and competition is often completed through both game theory experiments and models of real-world interdependent issues known as social dilemmas. An interdependent dilemma or relationship is characterized by an individual's reliance on another person or people and their reliance on the individual. A decision made by one individual will affect the others in the relationship and vice versa. Resource dilemmas and "tragedy of the commons" issues are the most pertinent social dilemmas to this study because of their ability to model environmental issues. Biel & Gärling (1995) describe such dilemmas as entailing, "A conflict between self-interests and the welfare of the group or society at large." In the dilemma, short-term selfish interests are at odds with long-term collective interests. Dawes (1980) suggests that social dilemmas are marked by two distinct properties; "A) the social payoff to each individual for defecting behavior is higher than the payoff for cooperative behavior, regardless of what the other society members do, yet B) all individuals in the society receive a lower payoff if all defect than if all cooperate."

The tragedy of the commons refers to the degradation of the environment that is expected when many individuals overuse a scare resource in common (Hardin, 1968). In the tragedy of

the commons, each actor (e.g. individual, company, nation) has the incentive to take from the common-pool resource to maximize their own immediate gain, while the delayed cost will be shared amongst the others until the resource is depleted. An example of a commons dilemma is open-sea fishing, which is relatively available to all, but is finite. As each actor fishes from the sea to maximize their own earnings, fish are depleted from the common resource until it is overfished and destroyed. Following this example, the dilemma could be resolved by encouraging a cooperative value across participants. Increasing cooperative tendencies could mitigate the amount of short-term selfishness, which could prevent the depletion of the common-pool resource (fish population).

There have been a variety of solutions proposed to avoid the tragedy of the commons issue and resource dilemmas. Hardin (1968) and others argue that these dilemmas can be ameliorated through governmental regulation and the reduction of personal freedoms. They propose that humans are too inherently selfish to manage their own commonly pooled resources, as humans will eventually deplete the resource. Conversely, this study and other researchers such as Dawes (1980) argue that the dilemma could be approached by promoting cooperation. Promoting cooperation could be effective at increasing personal restraint in environmental decisions. However, in the interest of being forthright, the discussion regarding whether humans are inherently egoistic and whether they can manage themselves with unregulated common resources is distinctly unresolved.

Zelenski, Dopko, & Capaldi (2015) view cooperative values as, "…those which contribute to collective benefits (but not necessarily without personal benefit)". Cooperation is often operationalized in social psychology as a social dilemma with a discordant choice between individual (selfish) interests and collective (cooperative) interests (Joireman, 2005). The way in

which a person acts to resolve a social dilemma in an interdependent relationship is referred to as their social value orientation (Kuhlman & Marshello, 1975). Social values refer to, "An individuals' consistent preferences for particular distributions of outcomes to self and to the other" (Kramer, McClintock, & Messick, 1986). An essential component to social value theory is the assumption that individuals approach these dilemmas with a propensity to act cooperatively or non-cooperatively (Van Lange & Kuhlman, 1994).

There has been a substantial investigation into the relationship between gender and cooperation with varying results. The literature tends to show that women are generally slightly more cooperative than men (Einolf & Chambre, 2011). Interestingly, a women's cooperativeness during social dilemma experiments increases with how much they trust the other person in the social dilemma (Irwin, Edwards, & Tamburello, 2015). Irwin et al. (2015) determined that trust increased a women's tendency to cooperate but had no effect on men's cooperation. Van Vugt, Cremer, & Jansen (2007) ran a series of three experiments that showed men cooperate under conditions of intergroup threat, but women's cooperation is largely unaffected. Intergroup threat is any type of situation that poses danger or conflict to a social group (e.g. food scarcity in small tribal units). Despite some slight differences in factors associated with cooperation, gender does not usually appear to directly affect cooperativeness in social dilemmas.

Relationship between Environmentalism and Cooperation/Competition

Several previous studies have examined the nature of the relationship between environmentalism, cooperation, and competition. Joireman (2005) describes the long cycle of competitiveness that has led to our current global environmental status. He points out that it has taken countless environmentally selfish acts by countless individuals to get to our current level of

global degradation. These acts can be viewed as decisions between immediate selfish and long-term cooperative interests. In many environmental decisions, a person must choose between individual or cooperative interests and immediate or long-term interests. A situation in which immediate selfish interests and long-term cooperative interests are at odds is considered a social dilemma. Therefore, examining environmental issues through the lens of a social dilemma could illuminate the relationship between cooperation and environmentalism (Zelenski et al., 2015).

Kramer, McClintock & Messick (1986) suggest that individuals differ in the way they approach environmental social dilemmas because of two main factors, social values and the structural characteristics of the specific dilemma. A social value refers to an individual's preference for cooperation or noncooperation. Structural characteristics are how severely or mildly the social dilemmas are modeled. For example, a social dilemma could be relatively mild (i.e. running out of art supplies at a school) or quite severe (i.e. starvation). Kramer and his colleagues (1986) separated participants into two categories, cooperators and noncooperators, based upon their social values determined in a decomposed game procedure. A decomposed game procedure is a laboratory game experiment designed to model real-life social dilemmas. Kramer and colleagues then compared how the two groups (cooperators and noncooperators) acted in a resource conservation task designed to measure proenvironmental behavior. A resource conservation task was set up so that participants would decide how many valuable points (i.e. fish) they would take from a collective recourse pool (i.e. the ocean). The amount of real-life money a participant would earn in the study was based upon the number of points they took from the collective pool. Much like real-life environmental social dilemmas, as the participants took more points for themselves, the collective resource pool (i.e. ocean) was depleted until no points (i.e. fish) were left. They found a significant main effect for social value

with cooperators taking fewer resources for themselves. Specifically, Kramer, McClintock & Messick (1986) argue that cooperation in social dilemmas could be linked to personal restraint in environmental decision making based on their results.

Kaiser & Burka (2011) hypothesized that environmentalists (participants scoring highly in environmental action) would act more prosocially than their non-environmental participants. In previous social value orientation research, prosocial individuals have been found to act more cooperatively than proselfish individuals (Kramer et al., 1986). In 2003, Kaiser & Burka (2011) sampled 4,445 people from a town in the Netherlands on their environmental engagement and prosociality, receiving 1,746 useable questionnaires. Two years later, they brought back 131 of those participants for a follow-up, in-laboratory questionnaire regarding environmental action. They compared participants previously labeled as prosocial to those that they labeled as proselfish. A large majority of their prosocial participants were labeled as highly environmentally engaged (90.2%), while only 9.8% of their proselfish participants were labeled as highly environmentally engaged. Additionally, they found that their proselfish participants scored lower in environmental engagement than their prosocial participants.

Similarly, Jia, Soucie, Alisat, Curtin, and Pratt (2017) conducted a mixed methods study that examined how different moral identities relate to an individual's tendency towards environmental involvement. Three types of moral identities were found: a self-transcendent identity, a self-interested identity, and a mixed identity. It was found that people who endorsed a self-transcendent moral identity scored significantly higher on environmental involvement than other two types of identity. In contrast, people who endorsed a self-interested moral identity scored the lowest on environmental involvement (also see Jia, 2017 for accessing the partial data of this study).

Zaval, Markowitz, & Weber (2015) successfully primed participants to have an increased propensity to donate to environmentally related issues. Priming is an experimental technique where participants are exposed to cues (i.e. words, objects, memories, etc.) to later trigger unconscious memories or attitudes. Zaval et al. (2015) asked participants to write a short essay describing what they wish to be remembered for, an exercise designed to prime participants to have stronger legacy motives. This study utilized a similar priming mechanism to facilitate cooperativeness, competitiveness, or control (no prime).

Major Issues within the Related Literature

The cooperation, competition, and environmentalism literature have two issues that were improved upon within the current study. Firstly, many of the studies that link cooperative attitudes, competitive attitudes, and environmental behavior are correlational or quasi-experimental. Secondly, studies on environmentalism have varied the operational constructs of the related terms which leads to some conceptual misunderstanding. These flaws enable a degree of speculation in the conclusions that can be drawn from this area of study. The current research addressed these two issues with an experimental design and by specifically defining the related environmentalism terms.

The first shortcoming with literature investigating the relationship between cooperation, competition, and environmentalism is that many have employed a correlational or quasi-experimental design. A correlational study design allows for the discovery of the strength of a relationship but is unable to prove causation. For instance, Dono et al. (2010) used a factor analysis to illuminate a predictive, correlational relationship between environmental activism and aspects of social identity. However, they could only theorize about potential real-life external applications of their study. Similarly, Joireman, Van Lange, Kuhlman, Vugt & Shelley (1997)

investigated the relationship between social value orientation (labeling participants as cooperative vs competitive) and environmental decision making by giving participants a battery of surveys. They sampled commuters in both Dutch train stations and gas stations. Participants at the two locations were given identical surveys regarding their commuting preferences and social value orientations. Joireman et al. (1997) found that those with "other-oriented" (cooperative) concerns were increasingly likely to have the desire to use public transportation when compared to those with "self-oriented" (competitive) concerns. Unfortunately, because of their correlational design, Joireman et al. (1997) were unable to suggest the possible causes or nature of this relationship. Additional research must be completed of the experimental typology so that conclusions can be drawn about the true nature and direction of any relationship present between cooperation and environmentally relevant behaviors or attitudes.

The second major issue in environmental psychology research is the discrepancy between the definitions of terms related to environmentalism. Specifically, environmental action is often studied through a wide umbrella of environmental behaviors and practices. These differing definitions lead to a degree of uncertainty about what behaviors should be included or excluded in environmentalism research. Recently, Alisat & Riemer (2015) noted that there is some conceptual confusion regarding environmental action. Some authors such as Kollmuss & Agyeman (2002) and Stern, Dietz, Abel, Guagnano, & Kalof (1999) view proenvironmental action as the act of changing daily personal behaviors (i.e. choice of vehicle). Others view environmental action differently. They theorize that proenvironmental action should encompass only collective civic behaviors that focus on altering environmental policy (Alisat & Riemer, 2015). Occasionally, yet other authors use the term proenvironmental action to broadly refer to both civic actions and personal practices (Jensen & Schnack, 1997). The current research

circumvented this issue by specifically defining environmental action as well as the other related terms.

Present Study and Hypotheses

This study addressed the gap in previous literature by cooperatively, competitively, or neutrally priming participants and comparing their respective environmental attitudes, environmental actions, and environmental identities. It was expected that if participants were primed by writing cooperative stories, then they would score more pro-environmentally on a battery of questionnaires designed to measure environmentalism. Participants primed by writing competitive stories were expected to score less proenvironmentally. Participants that wrote neutral stories were expected to score less proenvironmentally than the cooperative priming condition and more proenvironmentally than the competitive priming condition. Environmentalism was considered a multi-faceted construct including environmental action, environmental identity, and environmental attitudes.

Method

Participants

Participants were recruited from introductory psychology classes at Seton Hall University. Sign-up was voluntary, and participants earned partial credit towards class research participation requirements. In late 2017 and early 2018, 155 participants were recruited from online research participation sign-up software. Participants consisted of 115 women and 39 men (N = 155) aged 18 to 51 years old (M = 20.53, SD = 2.82). The cooperative priming group consisted of 36 women and 14 men (N = 50), the competitive priming group consisted of 41 women, 13 men, and one transgender (N = 55), while the neutral priming group consisted of 38 women and 12 men (N = 50). All participants were actively enrolled at Seton Hall University at

the time of the study. Participants had to be at least 18 years old to participate in the proposed study. Exclusion from the proposed study was additionally contingent upon prior participation in social value orientation studies. Candidates were asked if they have ever participated in a study regarding cooperation or competition and were excused if they had done so. The study was approved by Institutional Review Board at Seton Hall University.

Design

The study is a between-subject design with two experimental groups and one control group. In the experimental groups, participants were asked to recall and write about their past autobiographical memories when they were cooperative (cooperative priming condition) or competitive (competitive priming condition). The control group was unprimed and asked to recall an unrelated memory.

Procedures

Participants were asked to report to our lab individually or in small groups to be primed and subsequently evaluated with our questionnaire. As participants arrived to the lab they were randomly assigned into one of the three priming groups.

To prime our participants, we asked them to write a brief passage about a past personal experience in which they were cooperative (cooperative priming condition) or competitive (competitive priming condition). Participants assigned to each group responded to the corresponding prompts (see below). After the priming procedure, subjects took a battery of surveys to assess three dependent variables central to environmentalism. They were assessed upon environmental action, their environmental identity, and their environmental attitudes. Additionally, prior to administering our questionnaire we conducted a manipulation check to ensure that the priming procedure was successful.

Cooperative Priming Condition

*"I'd like you to recall a stand-out event in your life when you **cooperated** with others. This would be a time when you **sacrificed your own gain** (i.e. money, happiness, prestige) **for the collective gain of a group** (i.e. family, coworkers, friend group, society). It should be an important moment or episode in your own life story in which you experienced positive feelings (i.e. joy, excitement, peace, happiness) cooperating with others. Choose one event or episode that is fundamental to your life. **Please exclude sports related events.***

Describe it in detail – making sure to include what led up to the event so that it can be understood in context. Also include when and where it happened, who was involved, what you were thinking and feeling during the event, why it is important to you, and what impact the event has had on your life."

Competitive Priming Condition

*"I'd like you to recall a stand-out event in your life when you **competed** against others. This would be a time when you **maximized your own gain** (i.e. money, happiness, prestige) **against the relative gain of a group** (i.e. family, coworkers, friend group, society). It should be an important moment or episode in your own life story in which you experienced positive feelings (i.e. joy, excitement, peace, happiness) competing against others. Choose one event or episode that is fundamental to your life. **Please exclude sports related events.***

Describe it in detail – making sure to include what led up to the event so that it can be understood in context. Also include when and where it happened, who was involved, what

you were thinking and feeling during the event, why it is important to you, and what impact the event has had on your life."

Control Group

"I'd like you to recall a stand-out event in your life when you ***interacted*** *with others. It should be an important moment or episode in your own life story in which you experienced positive feelings (i.e. joy, excitement, peace, happiness)* ***with others.*** *Choose one event or episode that is fundamental to your life.* ***Please exclude sports related events.***

Describe it in detail – making sure to include what led up to the event so that it can be understood in context. Also include when and where it happened, who was involved, what you were thinking and feeling during the event, why it is important to you, and what impact the event has had on your life"

The control group was unprimed and was asked to recall an unrelated memory. Participants were asked to exclude sports related events because team sports create a rare situation where cooperation can be competitive, and competition can be cooperative. Recalling a significant past personal life experience required participants to draw on autobiographic memory. Autobiographic memory priming promotes activation of specific memories in the autobiographical memory system and primes other related memories in the system. (Mace & Clevinger, 2013). Specifically, autobiographic memory could facilitate conceptual associations, where episodes are associated by the same or similar content (Mace, Clevinger, & Martin, 2010). Our design paralleled this concept, it was expected that recalling a significant cooperative or competitive life event could cause additional subconscious associations of cooperative or competitive thoughts.

Manipulation Check

To ensure the priming procedure was effective, we used a manipulation check to evaluate cooperative and competitive values. A brief questionnaire of cooperative and competitive values (Lu, et al., 2013) was administrated to participants after priming. It included three items that are measure cooperativeness and three items that measure competitiveness. Participants responded to the questionnaire on a Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). A sample item of cooperativeness is "In order to succeed at work, a person must cooperate with their partners." A sample item of competitiveness is, "Even in a group working towards a common goal, I still want to outperform others." We expected participants primed in the cooperative condition to score higher on cooperativeness. We expected participants primed in the competitive condition to score lower cooperativeness. Additionally, we expected our unprimed participants to score moderately on both cooperativeness and competitiveness.

Environmentalism

After the priming procedure and manipulation check, participants were given a series of surveys to determine their scores on three dependent measures central to environmentalism. The three dependent variables are environmental action, environmental identity, and environmental attitude.

Environmental Action

To measure a participant's environmental action, they completed an environmental action scale (EAS) questionnaire (Alisat & Riemer, 2015). The Environmental Action scale consists of 18 items that assess a range of environmental actions (e.g., educating myself about environmental issues; talking with others about environmental issues… etc.). Participants responded to questions in the following format: "In the next six months, how often, if at all, do

you plan to engage in the following environmental activities and actions?" Items were rated on a 5-point scale ranging from 1 (never) through to 5 (frequently). The cronbach's alpha for this scale is .88 (Alisat & Riemer, 2015).

Environmental Identity

The Environmental Identity Scale, developed by Clayton (2003), was used to measure the strength of environmental identity. It includes 12 items rated on a Likert-type scale from 1 (not true of me at all) to 7 (completely true of me). ''I feel that I receive spiritual sustenance from experiences with nature'' is an example of an item. The cronbach's alpha for this scale is .81 (Clayton, 2003).

Environmental Attitude

The New Ecological Paradigm Scale (Dunlap, Van Liere, Mertig, & Jones, 2000) is a 15-item measure that assesses environmental attitude. Using a 9-point Likert-type scale ranging from 1 (very strongly disagree) to 9 (very strongly agree), participants rated items such as ''The earth is like a spaceship with very limited room and resources" and "The balance of nature is very delicate and easily upset." The cronbach's alpha for this scale is .76 (Dunlap et al., 2000).

Results

Descriptive Results and Manipulation Check

Means and standard deviations of each group are reported in Table 1. Correlations among key variables (Environmental Action, Environmental Identity, and Environmental Attitude) are reported in Table 2. Environmental identity was significantly correlated with environmental action ($r = .415$, $p < .000$) and significantly correlated with environmental attitude ($r = .367$, $p < .000$). However, environmental action was not significantly correlated with environmental attitude ($r = .105$, $p = .195$).

The cooperative and competitive manipulation check measures were significantly negatively correlated (r = -.172, p = .033) across all three groups. However, the correlations were not significant in either the cooperative (r = .04, p = .77) or competitive (r = -.21, p = .13) priming groups. This indicated that the two manipulation check measures were independent of each other in the priming groups. Unexpectedly, the priming manipulation only moderately enhanced cooperative scores. $F(2, 152) = 3.00$, p = .05. After being exposed to the manipulation, the participants who wrote cooperative stories reported higher cooperation (M = 6.06, SD = .68), compared with those in the competitive condition (M = 5.71, SD = .91), p = .018. However, participants in the control group (M = 5.96, SD = .64), did not significantly differ to either priming condition.

A single-coder qualitative analysis was conducted on the participants' responses to the priming question to determine the content of their stories and to identify any themes in their responses (examples of stories from each group and theme were reported in Tables 3, 4 & 5). On average, participants wrote 191.03 words in each story. The cooperative group responded to the prime with two main themes; sacrificing for family and volunteering. The theme of sacrificing for family is centered around participants writing about personal sacrifices they had made for the benefit of their families. The theme of volunteering consists of participants writing about times that they had given up happiness, money, time, etc. to volunteer for causes. In the cooperative priming group 16 participants out of 50 wrote about sacrificing for family, 24 participants out of 50 wrote about volunteering, and the remaining 10 wrote about miscellaneous topics such as playing in a marching band. The competitive priming group responded to the prime with two main themes; work and school. The work theme consists of situations in which participants competed to further their careers,

Table 1. Means and (Standard Deviation) of Measures Across Priming Group and Overall

	Cooperation	Competition	Control	Overall
Manipulation Check Cooperation	6.07 (.68)	5.72 (.91)	5.97 (.64)	5.91 (.77)
Manipulation Check Competition	3.90 (1.38)	4.19 (1.27)	3.91 (1.30)	4.00 (1.31)
Environmental Action Scale	2.23 (.56)	2.00 (.59)	2.05 (.66)	2.09 (.61)
Environmental Action Participation Subscale	2.84 (.67)	2.47 (.67)	2.56 (.89)	2.62 (.76)
Environmental Action Leadership Subscale	1.47 (.54)	1.40 (.65)	1.42 (.51)	1.43 (.57)
Environmental Attitude Scale	4.91 (.69)	4.93 (.75)	4.93 (.78)	4.92 (.74)
Environmental Identity Scale	5.18 (.81)	5.05 (.84)	5.19 (.96)	5.13 (.87)

Table 2. Correlation Matrices Between Measures

	Environmental Action	Environmental Action Participation Subscale	Environmental Action Leadership Subscale	Environmental Attitude	Environmental Identity
Environmental Action		.947**	.845**	.105	.415**
Environmental Action Participation Subscale			.630**	.146	.484**
Environmental Action Leadership Subscale				.011	.200*
Environmental Attitude Measure					.367**
Environmental Identity Measure					

** = significant at .01 level; * = significant at .05 level

while the school theme consists of situations in which participants competed to achieve academically. In the competitive priming group 19 participants out of 55 wrote about work, 24 participants out of 55 wrote about school, and the remaining 12 wrote about miscellaneous topics such as competing in spelling bees. The control priming group responded to the prime with two main themes; stories about vacations or trips and school. The vacation or trip theme consists of times in which participants had gone on important vacations with friends or family that had an impact on their lives. The school theme consists of academically related important experiences. Interestingly, many of the school related responses were centered around graduation. In the control priming group 27 participants out of 50 wrote about vacations or trips, 11 out of 50 participants wrote about school, and the remaining 12 wrote about miscellaneous topics such as jobs.

Main Results

An initial MANOVA was run with three groups (cooperative priming condition, competitive priming condition, and neutral priming condition) and three dependent variables (environmental action, environmental attitude, and environmental identity). Prior to running the MANOVA, raw scores from the environmental measures were converted into standardized z-scores to account for differences in the various scales. The three environmental measures were used to assess individuals' environmentalism. Overall, the results indicated that there was no significant difference in environmentalism based on the priming groups, $F(2, 155) = .636$, $p = .702$, Pillai's Trace = .025, partial $n^2 = .012$. In addition, there was no significant difference among groups in each environmental measure: environmental action, $F(2,155) = 1.476$, $p = .232$, partial $n^2 = .019$; environmental attitude, $F(2,155) = .006$, $p = .995$, partial $n^2 = .000$; environmental identity $F(2, 155) = .433$, $p = .649$, partial $n^2 = .006$.

Table 3. Examples of response themes in the cooperative group

	Family Sacrifice Theme	Volunteering Theme
Cooperative Group	"My parents wanted to go to a family reunion in Canada for my dad's side of the family this past July. They told me that I did not have to go if I did not want to because the decision to go was very last minute and they knew I had other plans. I knew that this event was something that was very important to my dad and while he said I did not have to go, I knew he wanted to. I decided that it was more beneficial to my entire family if I go with them, as I do not get to see them very often, even though I did not particularly want to drive 15 hours to Canada. This decision is important to me because I knew that it was incredibly important to my dad that I go, and my family ended up learning a lot about my dad's childhood and it brought us all closer together."	"While in high school I was part of many sports teams and much of the time they would require a fundraiser to get extra funds. During these times I would put together a group and we would make different fundraisers to produce the money that was needed. In each case I personally would put out a large sum of money to push the fundraiser, which included simply buying different objects for the fundraiser. A long with the money I would sacrifice much of my time to putting the fundraiser together and keeping it going as it progressed."

Table 4. Examples of response themes in the competitive group

	Work Theme	School Theme
Competitive Group	"An event that can be recalled where I competed against others is when I competed for a position at my current job. After about a year of searching and applying for jobs I would never come close to getting an offer. until recently, I entered the stage of interviews where I would have to sell my self to the potential employer of how beneficial I would be to the company. As there were many interviews and few positions I had to present myself as best as I could on paper, indicating my qualifications, then to speak one on one in how I fit in to what they were looking for and stand out from the others. I had to go through two days of training where my practical skills where put to the test. Soon after I received an offer for the job. throughout the job search I felt discouraged and hopeless because of the duration where there were no opportunities in view. Once an opportunity presented its self, I felt more hopeful yet nervous It would be a failed attempt. During training and after I felt confident in myself and the possibility of getting the job. All in all, it was a moment where I felt excitement. Although this has been a very recent event, the impact it has made in my life is financially, socially, and emotionally great."	"One time in my life when I competed against others was when I was trying to win a scholarship from my high school. I had to write essays, get letters of recommendation, and do an interview in order to get the scholarship. This scholarship was one that a lot of students at my school applied for, so I felt a lot of different emotions about it. I really wanted to get the scholarship, and I knew I would be upset if I didn't. I was super happy when I found out I was the one who got it. Getting this scholarship helped me be able to better afford college and if it weren't for this scholarship, I may not have been able to come to Seton Hall."

Table 5. Examples of response themes in the neutral group

	Vacation or Trip Theme	School Theme
Neutral Condition	"An exciting event in my life is when I found out I was going to Disney with my cousins. The morning of the trip my parents woke us up early in the morning and had us unwrap a present that told us we were going to Disney. My sisters birthday is only 6 days apart from mine, so it was a joint birthday present. As a child you most definitely want to hear your parents say that you are going to Disney. I remember my sister and I screaming out of happiness. We were also excited that we would be travelling on a plane for the first time alongside our cousins. This was most definitely one of the biggest stand out events in my life."	"I recall back in high school, when my friends and I were extremely stressed out about our final in our Calc class. We were all panicking because we knew we had to get a certain grade in the class to maintain an A. For a week straight we would all get together at someone's house and we would study for hours. It was draining, and I was exhausted the day of the exam. However, I took the test and got a 100 on my final and I was shocked that I did so well, but at the same time I was not surprised because of how hard my friends and I worked towards getting this grade. This experience showed me that hard work truly does pay off."

Table 6: Means and Standard Deviations of Environmental Measures and Priming Groups

	Env. Action (1-5)	Env. Attitude (1-7)	Env. Identity (1-7)
Cooperation Priming	2.23 (.57)	4.92 (.69)	5.18 (.81)
Competition Priming	1.99 (.59)	4.93 (.75)	5.05 (.84)
Control	2.05 (.66)	4.93 (.78)	5.19 (.96)

However, a post-hoc LSD test on priming groups revealed that people in the cooperative priming group scored marginally higher on environmental action than people in the competitive priming group ($p = .049$), but there were no statistically significant differences between the cooperative priming group and control group ($p = .137$) or between the competitive priming group and control group ($p = .649$). There were no statistically significant differences on environmental attitude scores across all conditions or on environmental identity scores across all conditions.

In order to further analyze environmental action, the environmental action scale was spilt into two subscales following previous literature showing environmental action could be categorized into participatory actions and leadership actions (Alisat & Riemer, 2016). A one-way ANOVA was run to test group differences (cooperative priming condition, competitive priming condition, and neutral priming condition) in the two environmental action subscales (participatory environmental actions and leadership environmental actions). The results indicated a significant difference by priming groups on participatory environmental action $F(2,155) = 3.474$, $p = .033$, partial $n^2 = .044$ but no statistical difference by priming condition on leadership environmental action $F(2.155) = .199$, $p = .819$, partial $n^2 = .003$. A post-hoc independent t test indicated that people in the cooperative priming group ($M_{coop} = 2.84$, $SD = .67$)

scored significantly higher ($t = 2.83$, $p = .006$, Cohen's $d = .55$) in the participatory environmental action than the competitive priming group ($M_{comp} = 2.47$, $SD = .67$). However, no statistically significant differences emerged between the cooperative priming group and control group ($p = .057$) or the competitive priming group and control group ($p = .559$).

Table 7: Means and Standard Deviations of Environmental Action Subscales

	Participatory Action (1-5)	Leadership Action (1-5)
Cooperation Priming	2.84 (.67)	1.46 (.53)
Competition Priming	2.47 (.67)	1.40 (.65)
Control	2.56 (.89)	1.42 (.51)

Discussion

Environmental issues are often modeled in psychological research with resource dilemmas, most often the tragedy of the commons resource dilemma (Hardin, 1968). The tragedy of the commons dilemma models a conflict between individual (or competitive) interests and group (or cooperative) interests. Similarly, many environmental issues (i.e. water usage or overfishing) can be framed as a conflict between competitive (individual) and cooperative (group) interests. Thus, manipulating cooperation and competition was expected to influence scoring on environmental measures in the present study. The cooperative manipulation group was hypothesized to score higher on environmental action, environmental attitudes, and environmental identity. The competitive group was hypothesized to score lower on environmental action, environmental attitudes, and environmental identity. The neutral group was hypothesized to score in between the cooperative and competitive groups. The hypotheses were partially supported in that the main results indicated that there was no significant difference

in environmentalism based on the priming groups, and no significant difference among groups in each environmental measure: environmental action, environmental attitude, environmental identity. However, the cooperative priming group scored higher on environmental action than people in the competitive priming group. Furthermore, participants in the cooperative priming group scored significantly higher on participatory environmental action than the competitive priming group.

The marginal group differences in environmental action that emerged between the cooperative and competitive priming groups are consistent with past literature. A previous study utilized a similar priming method to enhance environmental action (Zaval et al., 2015). Zaval et al. (2015) found that primed participants donated to environmental causes at a significantly higher rate than unprimed participants. Interestingly, group differences reported by similar priming studies also exhibited borderline significance (Zaval et al., 2015, Drouvelis et al., 2015). This may reflect the nature of priming for social values. Another past study conducted by Kenis and Mathijs (2012) also argued meaningful environmental actions are based in collective behaviors. They found a positive correlation between responses to environmental action questionnaires and prosocial values.

The responses to environmental action were investigated further by splitting the environmental action measure into two subscales; participatory actions and leadership actions (Alisat et al., 2016). Participatory actions are categorized as involvement in environmental actions through established methods, while leadership actions include taking organizational roles or managing environmental initiatives. An example of a participatory environmental action is reading a monthly newsletter to inform oneself about current issues, while an example of a leadership action is organizing a recycling drive. These two subscales were identified by Alisat

et al. (2016) during the development of their overall environmental action scale. They theorized that participatory actions are the first type of environmental action that a person adopts, while leadership actions are developed overtime as personal interest in environmental issues grow. The results indicated a significant difference by priming groups on participatory environmental action. Participants in the cooperative priming group scored significantly higher in the participatory environmental action than the competitive priming group. These results are supported by Alisat et al. (2016). They suggest participatory actions are easier to adopt at an early, less engaged, stage of environmental action. If the priming mechanism was indeed not particularly strong, the results would be expected as such. Participatory environmental actions are relatively easier to prime, as the threshold for interest in them is much lower than leadership environmental actions. Expectedly, there was no statistical difference by priming condition on environmental leadership action. Environmental leadership actions naturally take a high level of involvement and time investment and would likely require a more robust prime to impact.

The implications of the results could affect how governments or private businesses approach environmental conservation efforts. When recruiting people to support environmental causes, lower level participatory actions should be easier to elicit than higher level leadership actions. Environmental initiatives could promote cooperation to achieve greater involvement in participatory environmental actions. Marketing for recycling and other lower level participatory involvements should be a focus point. Following the theory of Alisat et al. (2016), as people become more involved in participatory environmental actions they could begin to take on environmental leadership roles over time. Additionally, modifying educational programs to include a unit focusing on cooperation in the context of participatory environmental actions may serve as a step forward in mitigating our current environmental issues.

The nonsignificant results on environmental attitude and environmental identity could be partially attributed to a lack of strength in the priming mechanism. It is possible that participants did not take the priming task seriously or that they did not follow the prompt closely enough to become engrossed in their past autobiographic memories. Therefore, the strength of the prime was measured with a manipulation check. It was a six-item questionnaire consisting of a three-item cooperation subscale and a three-item competition subscale. Interestingly, the priming manipulation in the present study only moderately enhanced cooperative score. Though the priming mechanism was not particularly robust, it was a manipulation in the excepted direction.

The responses were 191.03 words long on average. Many participants included good detail and specificity in their stories, suggesting that the priming deficit could be related to the actual content of the stories rather than issues with participant's effort. A portion of the priming stories were about instances of cooperation or competition that did not directly follow the given definitions of the concepts. For example, one participant in the cooperative condition responded with:

> *"A few years ago, I had a friend who was having a rough time in his life. He wasn't the most popular person, so when his birthday happened no one but his own mother and me said or did anything with him. Feeling bad for him, I decided I was going to throw a party for him. I bought food, desserts, party supplies, and invited as many people as I could. The weekend after his birthday, I surprised him with this spectacular party. He was overwhelmed and happy as could be. It felt amazing bringing someone that kind of happiness. I've always continued showing my friends and family that kind of devotion and care. I just believe showing people the upmost respect is the way everyone should be."*

The story is technically an instance of cooperation and is certainly prosocial but does not directly comply with this study's instructions of writing about, "*a time when you* ***sacrificed your own gain*** *(i.e. money, happiness, prestige)* ***for the collective gain of a group*** *(i.e. family, coworkers, friend group, society)."* The story does not involve sacrifice for the collective gain of a group. Rather, it is a thoughtful action for the gain of one other person. A participant in the competitive priming condition responded to the prime with:

> *"There was this time in high school when I would always look up to others. The kids who were always smarter than me in school, getting better grades and just overall smarter. When it came to taking SATs I did not know what to expect but once the test scores came out, I went to this person to ask for their score. When I realized I got a higher score than that person I was happy. I know this might seem like a very selfish act, however I always wanted to be part of the smart people in school. People never acknowledge how smart I was therefore it boosted my ego up a lot because I knew I could fit in with others. Deep down inside I was happy and it made me feel a lot better about myself rather than thinking that I am just a kid who is not smart."*

Again, this story is technically an instance of competition but does not directly comply with the operational definition given to participants in the priming mechanism. Participants were asked to write a competitive story about, "*a time when you* ***maximized your own gain*** *(i.e. money, happiness, or prestige)* ***against the relative gain of a group*** *(i.e. family, coworkers, friend groups, or society)."* In the story above there is no conflict with the collective gain of the group. In sum, a combination of the strength of the prime and the content of the prime (participant compliance) most likely contributed to the nonsignificant results.

The nonsignificant environmental identity results could also be partially explained with previous research that suggests an individual's identity is difficult to rapidly manipulate (Amiot, Doucerain, Zhou, & Ryder, 2018). Perhaps participants' environmental identities would be impacted by a longer duration priming mechanism. Amiot et al. (2018) found that identity characteristics could not be manipulated in one session but could only be altered over the span of many weeks to months.

Additionally, the initial nonsignificant results could be explained by demand characteristics. Participants may have been responding to the questionnaires in a manner that would make them seem more cooperative, as cooperation is seen as more socially desirable than competition by many American college students (Tang, 1999). An open-ended question at the end of the questionnaire asked participants what they perceived the purpose of the study to be and 18 out of 50 participants in the cooperative group, 22 out of 55 participants in the competitive group, and 9 out of 50 participants in the control group indicated that they knew the study was regarding the effect of cooperation and competition on environmental values. An example of a response to the open-ended question from a participant in the competitive condition is:

> *"The purpose of this study is to show the relationship between morals and caring for environmental issues. I believe that perhaps if one enjoys competition and is more of a selfish person the assumption is that they would not care for environmental issues and vice versa."*

The response does not indicate any knowledge of the priming mechanism. However, it does indicate a basic belief that competitive values are linked to carelessness towards the

environment. This belief may have impacted the way participants responded to the questionnaire.

The study had two main limitations, the effectiveness of the prime and the number of men included in the study. The prime was relatively brief and may have been more robust if participants were asked to recall their autobiographical memories for a longer duration of time. Previous research suggests priming is improved by both repetition of a priming stimulus and the duration of the prime (Versace & Nevers, 2003). Similarly, the limitation of our priming mechanism could be abetted with a longer prime or repetitive prime. Participants could write a series of short stories or a single longer story. In addition, the contents of the prime could be improved with a more specific priming instruction. Many of the contents of the stories did not follow the exact operational definitions of cooperativeness or competitiveness. However, it is important to maintain enough flexibility that participants are able to think of stories from their lives that match our definitions. If the instructions become too specific and rigid many participants may be unable to think of real stories from their lives.

Moreover, participants consisted of 115 women and 39 men. While cooperativeness and competitiveness have been found to be relatively unaffected by gender, women have been found to be slightly more cooperative than men (Einolf & Chambre, 2011) in social dilemmas. This research is supported by our findings that show an overall higher level of cooperativeness averaged across all participants. Many college campuses, especially within psychology programs, are majority women. Additionally, college students are generally more cooperative and sensitive to environmental issues than the general public. It may be wise to look outside psychology undergraduates for the participant pool for a follow up study.

Another possible future direction to improve upon the study would be to emphasize the interdependency of the social dilemma during the priming mechanism. Interdependency is situation where two or more people mutually rely upon each other for an outcome. Dawes (1980) notes that cooperation is increased when people understand that their actions affect other people and that other people's actions affect them. A future direction is to make interdependence in social dilemmas more salient. For example, a confederate could be used to make the social dilemma feel more genuine.

The results of this study represent a small initial step towards addressing the issue of environmentally unfriendly behavior at the individual level. Focusing on individual social values like cooperation could help mitigate climate issues when combined with higher level efforts in the corporate world.

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SETON HALL UNIVERSITY
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May 10, 2017

Fanli Jia, Ph. D
[redacted]

Dear Dr. Jia,

The Seton Hall University Institutional Review Board has reviewed the information you have submitted addressing the concerns for your proposal entitled "Values and Environmentalism". Your research protocol is hereby approved as revised through expedited review. The IRB reserves the right to recall the proposal at any time for full review.

Enclosed for your records are the signed Request for Approval form, the stamped Recruitment Flyer, and the stamped original Consent Form. Make copies only of these stamped forms

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol must be reviewed and approved by the IRB prior to their implementation.

According to federal regulations, continuing review of already approved research is mandated to take place at least 12 months after this initial approval. You will receive communication from the IRB Office for this several months before the anniversary date of your initial approval.

Thank you for your cooperation.

In harmony with federal regulations, none of the investigators or research staff involved in the study took part in the final decision.

Sincerely,

Mary F. Ruzicka, Ph.D.
Professor
Director, Institutional Review Board

Office of Institutional Review Board
Presidents Hall · 400 South Orange Avenue · South Orange, New Jersey 07079 · Tel: 973.313.6314 · Fax: 973.275.2361 · www.shu.edu/

A HOME FOR THE MIND, THE HEART AND THE SPIRIT

Please review Seton Hall University IRB's Policies and Procedures on website (http://www.provost.shu.edu/IRB) for more information.
Please note the following requirements:

Adverse Reactions: If any untoward incidents or adverse reactions should develop as a result of this study, you are required to immediately notify in writing the Seton Hall University IRB Director, your sponsor and any federal regulatory institutions which may oversee this research, such as the OHRP or the FDA. If the problem is serious, approval may be withdrawn pending further review by the IRB.

Amendments: If you wish to change **any** aspect of this study, please communicate your request in writing (with revised copies of the protocol and/or informed consent where applicable and the Amendment Form) to the IRB Director. The new procedures cannot be initiated until you receive IRB approval.

Completion of Study: Please notify Seton Hall University's IRB Director in writing as soon as the research has been completed, along with any results obtained.

Non-Compliance: Any issue of non-compliance to regulations will be reported to Seton Hall University's IRB Director, your sponsor and any federal regulatory institutions which may oversee this research, such as the OHRP or the FDA. If the problem is serious, approval may be withdrawn pending further review by the IRB.

Renewal: It is the principal investigator's responsibility to maintain IRB approval. A Continuing Review Form will be mailed to you prior to your initial approval anniversary date. **Note:** No research may be conducted (except to prevent immediate hazards to subjects), no data collected, nor any subjects enrolled after the expiration date.

REQUEST FOR APPROVAL OF RESEARCH, DEMONSTRATION OR RELATED ACTIVITIES INVOLVING HUMAN SUBJECTS

All material must be typed.

PROJECT TITLE: *Value an Environmentalism*

CERTIFICATION STATEMENT:

In making **this application,** I(we) certify that I(we) have read and understand the University's policies and procedures governing research, development, and related activities involving human subjects. I (we) shall comply with the letter and spirit of those policies. I(we) further acknowledge my(our) obligation to (1) obtain written approval of significant deviations from the originally-approved protocol BEFORE making those deviations, and (2) report immediately all adverse effects of the study on the subjects to the Director of the Institutional Review Board, Seton Hall University, South Orange, NJ 07079.

Dr. Fanli Jia

RESEARCHER(S) — April 10th 2017 DATE

Please print or type out names of **all researchers below signature.
Use separate sheet of paper, if necessary.**

My signature indicates that I have reviewed the attached materials of my student advisee and consider them to meet IRB standards.

RESEARCHER'S FACULTY ADVISOR [for student researchers only] — DATE

Please print or type out name below signature

The request for approval submitted by the above researcher(s) was considered by the IRB for Research Involving Human Subjects Research ~~at the~~ ~~March 15th~~ in April 2017 meeting.

The application was approved ✓ not approved ___ by the Committee. Special conditions were ___ were not ✓ set by the IRB. (Any special conditions are described on the reverse side.)

Mary J. Ruzicka, Ph.D — 5/10/17

DIRECTOR, DATE
SETON HALL UNIVERSITY INSTITUTIONAL
REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH

Seton Hall University
3/2005

Seton Hall University
Institutional Review Board
MAY 10 2017
Approval Date

COLLEGE OF ARTS AND SCIENCES
SETON HALL UNIVERSITY

Expiration Date
MAY 10 2018

INFORMED CONSENT

Personal Values and Environmental Issues
Dr. Fanli Jia
Department of Psychology, Seton Hall University

Purpose

This study focuses on the values that define individuals' environmental identity. The goal of this study is to find out how young adults feel about environmental issues in different areas of their life. The estimate of the amount of time involved to participate in this study is about 45 minutes.

Procedures

The participant will be asked to complete 4 surveys and a short demographic questionnaire through an on-line survey.

Instruments

In this online survey, the participant will be given a list of numerical games that are commonly used to measure a social value orientation. He/she will be asked to select either option A or option B to represent your own point of view. In the second step, he/she will be asked to rate three sets of questionnaires about environmental values on Likert scales. The first questionnaire is about "Thoughts about Nature". For example, "I spend a lot of time in natural settings (woods, mountains, desert, lakes, and ocean)". The second questionnaire is "Feelings about the Environment". A sample of the item is "'Humans are severely abusing the environment". The third questionnaire is "Environmental Involvement". A sample item is: "I have organized an environmental rally."

Voluntary Nature

Participation in this study is completely voluntary and may be withdrawn at any time by closing the internet session page. Declining or discontinuing participation at any time will involve no penalty. Students seeking to receive research credit are eligible to participate in other research opportunities.

Anonymity

Identifiable data will not be collected as a part of this study. Participant data will be coded according to their SONA ID separately from their responses, so that they may receive course credit for participation.

Confidentiality

No identifiable data will be gathered. While there is always a potential risk of loss of confidentiality in all e-mail, downloading, and internet transactions, or by hacking of online surveys, all data will

be gathered through a password-protected electronic survey system. All electronic files will be stored on a password protected USBs in Dr. Jia's locked office at SHU.

Records
All data should be recorded anonymously. The coding system to protect participants' identity will not use participants' initials, Social Security Numbers, addresses, etc., in place of name. Instead, assignment of random numbers to participants will be used.

Only the principal investigator (Dr. Fanli Jia) will have access to the data. According to the rules of the American Psychological Association, data need to be kept for 5 years after finishing a research project. All materials from this project will be destroyed by Dr. Fanli Jia after May 1. 2022.

Risks or Discomforts
There are no anticipated risks to participate in this study.

Benefits
The participant will have an opportunity to ponder what values personally matter to him/her. Thus, the study offers an opportunity to clarify one's personal values. For society at large, understanding how thoughts and feelings about environmental matters develop in emerging adulthood is essential. It will help to improve educational programs designed to foster positive development, i.e. the development of caring and responsible citizens.

Payment
Because participation in this study is voluntary, there is no payment or other remuneration.

Compensation
The participant will receive credit towards research participation as compensation for participating in the study.

Alternative Procedures
The participant is permitted to do an alternate assignment instead of participating in research studies. The alternate assignment is described in the participant's syllabus for the course for which compensation would be granted.

Contact Information
If the participant has questions about the study or the procedures, they may contact the principal investigator, Dr. Fanli Jia, assistant professor of psychology, either in person at Room 358 Jubilee Hall or by telephone (973) 275-2708. Questions about the rights of participants may be directed in person to Dr. Mary Ruzicka, Director of The Institutional Review Board (IRB), or by telephone: (973) 313-6314.

Video or Audio-tapes
There are no video or audio-tapes involved in the study.

Consent
The participant will receive an electronic copy of their consent form for future reference.

Seton Hall University
Institutional Review Board
MAY 10 2017
Approval Date

Expiration Date
MAY 10 2018

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Title of Study: Personal Values and Environmental Issues

Location: Online questionnaire through SONA
Estimate Duration: 45 minutes
Number of Credits: 1
Researcher: Dr. Fanli Jia, Psychology Department, Seton Hall University, fanli.jia@shu.edu

Brief Study Description: The goal of this study is to determine a relationship between social values and environmentalism.

What to expect: In this online survey, participants will be asked to complete four survey and a short demographic questionnaire. First, the participants will be given a list of numerical games that are commonly used to measure a social value orientation. They will be asked to select either option A or option B to represent your own point of view. Then participants will be asked to rate a set of questionnaires about environmental values, engagements, and attitudes. The study will take place online on a personal computer.

How long will it take? Participation will take about 45 minutes.

Who is eligible? Every undergraduate student who are 18 years of age or older is eligible to volunteer for the study.

Is participation mandatory? No. Participants may elect to leave the study at any time.

What will happen to the data? Although no identifiable data will be collected that will link responses to the participant, data sets will separate the use of SONA IDs and the data file to ensure that all data being analyzed is entirely blinded.

Seton Hall University
Institutional Review Board
MAY 1 0 2017
Approval Date

Expiration Date
MAY 1 0 2018

College of Arts and Sciences
Department of Psychology
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