Culture of Sustainability:
Measuring Sustainable Lifestyles at the College Level

By

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Environmental Ethics Fellowship Paper
Markkula Center for Applied Ethics
Santa Clara University, 2009

Santa Clara, California

SANTA CLARA UNIVERSITY

As the effects of humans on the world become more apparent, the concept of sustainability is becoming more prevalent as well. People are trying to understand the best ways to make our world (the environment, people, diverse cultures, etc.) last, while still maintaining the same kind of lifestyle. Santa Clara University has recently created an official Office of Sustainability to support the university and its students in carrying out sustainable practices. The culture of sustainability at Santa Clara embodies the values and goals of the university and its community members. This study hopes to better understand undergraduate students' values, how they view sustainability and already carry out sustainable behaviors, so that programs to educate and promote sustainability can be more effective in the future. Results from a quantitative survey suggest that students have difficulty properly defining sustainability and act in accordance to their perceptions of behaviors' environmental impact. These findings support the theories of Structural Functionalism and Symbolic Interactionism as crucial aspects of undergraduate sustainability education and culture.[1]

Background

Sustainable development, according to the 1987 United Nations World Commission on Environment and Development, is "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

A Pennsylvania State University study divided sustainability into five core principles: respecting life and natural processes, living within limits, valuing the local, accounting for full costs (cost to environment and society should be reflected in price), and sharing power (responsibility) (Uhl and Anderson 2001:36).

As people become more and more aware of the harmful impact humans have on the environment and each other's cultures and big business can have on smaller businesses, the concept of sustainability is also becoming more prevalent to counterbalance those effects. Sustainability includes issues not only pertaining to the environment, but to social justice, diversity, economic vitality, health care, and an overall long-term approach to global problems. For the Earth to continue with all of its cultures and resources, people must consider their moral obligations to a more sustainable future.

Santa Clara University created the Office of Sustainability in October 2008 to handle related issues on campus, and support and create further initiatives and efforts (Cromwell 2009). It adopted a Sustainability Policy in 2004 where former President Paul Locatelli, S.J., "devoted the university to sustainability through stewardship, education and outreach." He then signed the American College and University Presidents Climate Commitment in 2007, aiming to become a climate neutral campus. The university also completed its first Campus Sustainability Assessment in 2007. Santa Clara also takes part in the international Solar Decathlon competition; in 2007 a team of SCU engineering undergraduates took third place in the event.

The university's commitment to sustainability can also be seen in its buildings. Kennedy Commons was built as a demonstration of sustainable design in 2006. Harrington Learning Commons is twice the size of the old library, but uses about the same amount of energy.

This dedication to sustainability has earned Santa Clara many awards including being named one of Kaplan's Top 25 Environmentally Responsible Colleges and tying for second place in Princeton Review's Green Ratings in California.

Literature Review

A review of works published about sustainability in higher education yields that universities are the best catalysts for change, an interdisciplinary and holistic approach is necessary to teach sustainability, and fostering a sustainable culture is an imperative aspect of developing students with sustainable lifestyles.

Universities' Influence

It is widely believed that higher education is the route to implanting sustainable lifestyles into society. Universities educate many leaders who control the world. The educational system is the first place to start making meaningful change and influence future leaders. "Universities educate most of the people who develop and manage society's institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future" (Blackburn et al. 1990). Universities hold a lot of authority both over their students and on the communities around them, so they have an obligation to use this power to affect positive change. "(Higher education) prepares most of the professionals who develop, lead, manage, teach, work in, and influence society's institutions, including the most basic foundation of K-12 education" (Cortese 2003:17). Universities serve as leaders for the rest of the world academically and otherwise, and thus, can "offer vision and serve as models of integrity and wisdom" (Uhl and Anderson 2001:42). Universities offer a

singular experience in the intellectual sovereignty, clout, and resources that they hold, which cannot easily be duplicated outside of the collegiate realm. "Higher education has unique academic freedom and the critical mass and diversity of skills to develop new ideas, to comment on society and its challenges, and to engage in bold experimentation in sustainable living" (Cortese 2003:17).

Universities have the influence to enact real change in the world. "Education underlies and has the potential to reinforce every other priority…for a sustainable world" (Calder and Clugston 2003:10004). "It is people coming out of the world's best colleges and universities that are leading us down the current unhealthy, inequitable, and unsustainable path" (Cortese 2003:16). Therefore, universities hold "a golden opportunity to create a new generation of socially and ecologically responsible citizens" (Uhl and Anderson 2001:42).

Holistic Approach

In order to best educate students about sustainability, universities must take a well-rounded approach, using every possible avenue to reach their students. "Students learn from everything around them," so every aspect of university life is a potential learning experience (Cortese 2003:17). Everything from curriculum, to dining policies, to new buildings must be considered. "A holistic focus is needed to capitalize on curriculum changes and operational investments tilled toward a sustainable future" (Hignite 2006:12).

Students must learn from the many perspectives of sustainability to obtain the necessary skills and knowledge to live sustainable lifestyles. "To acquire and implement competencies [for sustainable development], the existence of various and manifold contexts is important" (Barth et

al. 2007:427). A mix of formal and informal learning settings provide these contexts and allow students to absorb and process the information in different ways.

An interdisciplinary approach to sustainability is necessary, integrating it into all classes and fields. This will allow students to better understand and compare how different issues are affected from different angles. The HESD (higher education for sustainable development) movement "primarily involves teaching students to understand ecological, social, and economic problems through the many lenses of an interdisciplinary framework" (Calder and Clugston 2003:10004).

"Agenda 21[2] calls for integrated decision-making based on integrated information to enable individuals, organizations, institutions, businesses and governments to incorporate environmental considerations and goals in social, economic (and even security) decisions" (Calder and Clugston 2003:10004). The goal is to have well-informed graduates who can make ethical choices, which demands a firm grasp of many subjects. "The context of learning will change to make human/environment interdependence, values, and ethics a seamless and central part of teaching of all disciplines" (Cortese 2003:19).

Teaching sustainability must go beyond the classroom and be incorporated in all aspects of university life. Christopher Uhl and Amy Anderson believe "U.S. college students are not learning nearly enough about how to live day to day in a sustainable fashion" (2001:40), but universities can be catalysts by "achieving sustainability in all facets of university life" (2001:42).

Further development requires that "(sustainable) values are reflected in each of the core areas of university life: research, teaching, outreach, and operations" (Calder and Clugston

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[2] U.N. Conference on Environment and Development 1992.

2003:10003). These areas include student, professor, staff, and administrative participation. "All parts of the university system are critical to achieving a transformative change that can only occur by connecting head, heart, and hand" (Cortese 2003:17-18).

Many experts agree universities must implement what they teach about sustainability into their own policies and processes, as well as teach it through the curriculum, in order for their sustainability education to be most effective. "A campus would practice what it preaches and make sustainability an integral part of operations, planning, facility design, purchasing, and investments and tie these efforts to the formal curriculum" (Cortese 2003:19).

Fostering Culture

Fostering a sustainable culture is the most effective way to instill values and habits that will lead to sustainable lifestyles in graduates. Anthony Cortese called this change to developing a more sustainable world "a deep cultural shift" (2003:17). This change must be a communal initiative. "Designing a sustainable human future requires a paradigm shift toward a systemic perspective emphasizing collaboration and cooperation" (2003:16). "The Talloires Declaration," written and signed by a group of university presidents, had its second action item listed as "create an institutional culture of sustainability" (Mayer et al. 1990). Not one group, field of study, or aspect of the university can make the change alone. The culture must be altered to include this in every aspect of everyday life on campus. The community must support collective and individual endeavors. Matthias Barth et al call for "a university culture which supports and recognizes students' voluntary commitment" (2007:427).

Theoretical Perspectives

This study seeks to understand the culture of sustainability at Santa Clara University, and determine the different aspects and the strength of this culture.

Students likely do not fully understand the concept of sustainability. Taking a Structural Functionalist stance, I believe this is mainly because they have not been required to learn this. Sustainability has not been to date part of the core curriculum requirements; therefore, fewer students have had classes that teach them or have taken an interest in learning about sustainability. Structural Functionalism, a theory developed by Emile Durkheim, says that society changes to meet needs (Powers 2004:135-51). Sustainability education has yet to be something society and educational institutions need to adjust to. It is not yet a standard for universities. This leads me to my first hypothesis:

1. *Fewer students will be able to correctly define sustainability.*

Students likely don't realize what behaviors have the greatest impact, but may already engage in certain positive behaviors. As society has become more environmentally conscious, different sub-movements, recycling for example, have taken the limelight. George Herbert Mead's theory, Symbolic Interactionism, claims that people find shared meanings in symbols (Powers 2004:171-189). Though it is not the most impactful of sustainable actions, recycling, as Symbolic Interactionism suggests, has become a strong symbol of environmentalism and, more recently, of sustainability. Not entirely informed, students have taken this symbol to mean sustainability, though it is only one facet of the definition. Furthermore, I believe that students' motivation to do good for the environment will follow the Symbolic Interactionist idea of "identity." Identity is feeling that membership in a group is so important it affects your choices (2004:181). In a time when the average students are constantly surrounded by their peers —

living together in the dorms, taking classes together, working on campus together — it is likely that their peers have a lot of influence on them. They are motivated to behave in this way in order to fit in, feel like a part of the group and appear environmentally conscious to their peers. This leads me to my second and third hypotheses:

2. *Students will be more externally motivated toward the environment.*

3. *Students will engage in behavior based on their perception of the behavior's environmental impact.*

Methodology

As a qualitative study concerning campus sustainability was completed at Santa Clara last year, it made sense to complete a quantitative counterpart (Mooney 2008). The qualitative study provided some insight into students' perceptions and actions pertaining to sustainability. Quantitative data can provide a more accurate sample of the population as more people can generally be reached. Quantitative data can also provide more objective and comparable data.

Quantitative data was collected through a campus-wide survey. All undergraduate students were invited to participate to get an understanding of the overall culture of the school. Since I collected data from a large amount of people, a survey was the easiest way to get an overview of SCU culture of sustainability. Questions covered participant understanding of sustainability, motivation to live sustainably, and what sustainable behaviors each take part in. The survey was posted on SurveyMonkey.com. The survey is strictly a quantitative questionnaire.

<u>Best Practices</u>

It is important to be mindful of the safety and well-being of all participants by abiding by a set of ethical principles. The federal government mandates institutional review boards at universities accepting federal funding for research involving humans (Glesne 2006:130). The five guiding criteria the review boards use are:

> 1. Research subjects must have sufficient information to make informed decisions about participating in a study. 2. Research subjects must be able to withdraw, without penalty, from a study at any point. 3. All unnecessary risks to a research subject must be eliminated. 4. Benefits to the subject or society, preferably both, must outweigh all potential risks. 5. Experiments should be conducted only by qualified investigators (130).

Informed consent is another ethical standard. Respondents must knowingly agree to what they are participating. Irving Seidman created a checklist for drafting informed consent agreements. The eight major parts include an explicit statement inviting them to take part in a research study, an outline of potential risks they may incur, the rights of the participant, possible benefits for the participant and society, assurance of confidentiality, intentions for dissemination, stipulations for minors, and contact information and copies of the form for the participant to keep (2006:60-62).

In accordance with these ethical standards, an invitation was sent via e-mail to the entire undergraduate student body inviting them to participate in the online survey (Appendix B). The e-mail included an explanation about the survey and its use, and explained that they may choose not to answer any question or stop at any time. It explained the opportunity to be entered into a raffle for an iPod by participating in the survey. It included a link to the survey. A reminder e-mail with the same information was sent three weeks after the first.

No identifiers were recorded for the survey. The survey was taken anonymously online. If students wished to enter themselves in the raffle, they were directed to a separate website.

Names for the raffle were kept on a separate list and not associated with the data collected (Appendix C).

I collected 806 responses. There were 4, 877 undergraduate students as of spring 2008, the last published count, according to the Office of Institutional Research (2008b). Allowing that there is a similar number of students in 2009, the survey had approximately a 16.5 percent response rate.

The sample is composed of 53.6 percent females and 31.4 percent males. Santa Clara's undergraduate student population is 52.9 percent female and 47.1 percent male ("Student Profile" 2008).
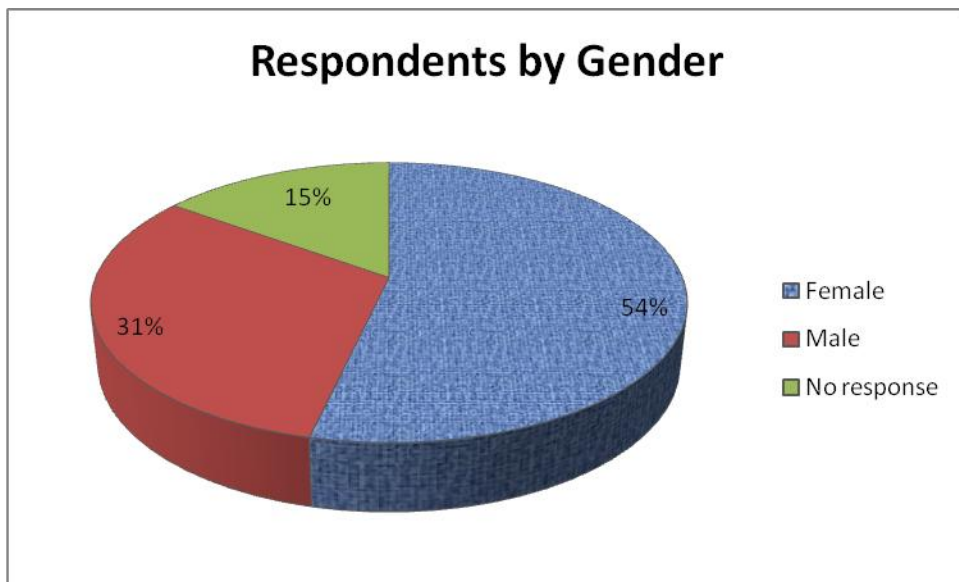
The largest category of respondents by age was 19-year-olds at 26.4 percent, followed by 21-year-olds at 21.7 percent.

Respondents by age (years old):

- 16 or younger (0 percent)
- 17 (0.1)
- 18 (15.5)
- 19 (22.4)

- 20 (17.5)
- 21 (18.5)
- 22 (8.0)
- 23 or older (3.1)

Respondents by Age

0% 0%

9% 4% 18%

22%

26%

21%

Legend:
- 16 or younger
- 17
- 18
- 19
- 20
- 21
- 22
- 23 or older
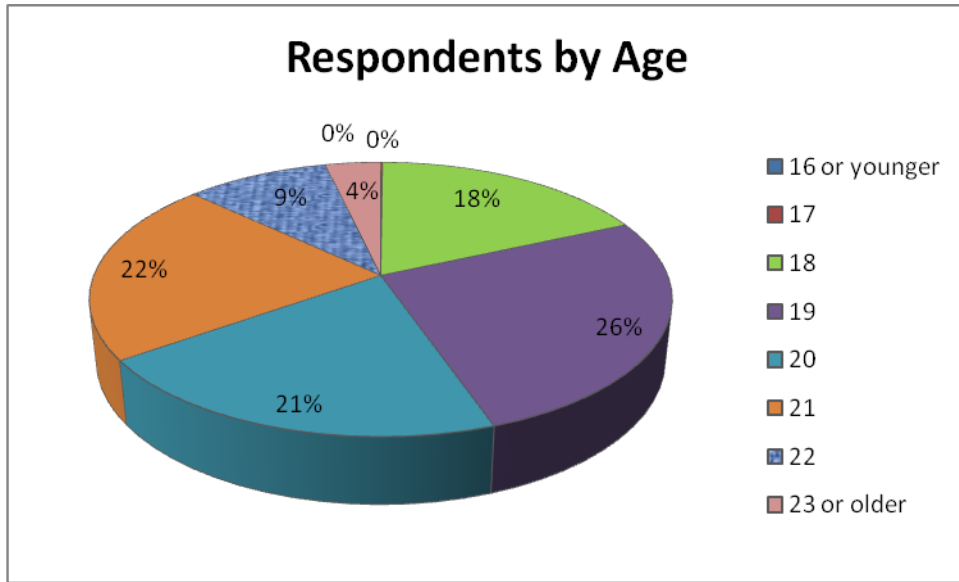
The largest category of respondents by class year was first-year students at 26.4 percent,

followed by second-year students at 19.6 percent.

Respondents by class year:

- First-year student (26.4 percent)
- Second-year student (19.6)
- Third-year student (19.2)
- Fourth-year student (17.2)
- Fifth-year student (2.1)

Respondents by Class Year
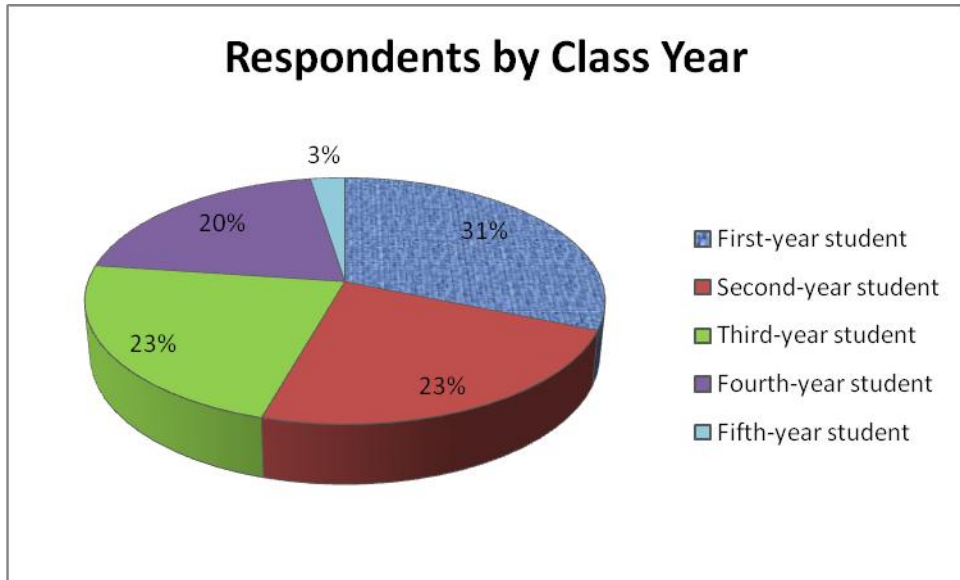
The largest category of respondents by college was arts and sciences with 48.5 percent.

Santa Clara's student population falls 52.6 percent in arts and sciences, 34.8 percent in business,

and 12.5 percent in engineering (Office of Institutional Research 2008a).

Respondents by college:

- Arts and sciences (48.5 percent)
- Business (23.1)
- Engineering (13.2)

Respondents by College
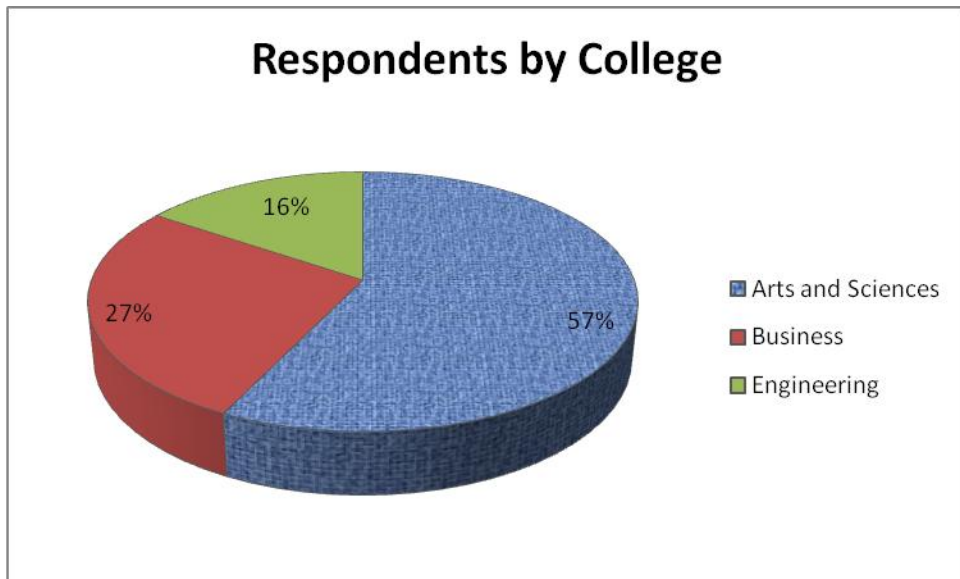
<u>Duplicated Data</u>

By collecting survey data online we were able to scan for duplicates by comparing Internet Protocol (IP) addresses. Each computer on a network can be identified through a unique IP address, seen as a numerical code. SurveyMonkey collects these addresses with each response.

Out of the 806 responses, 30 were part of a pair of repeated IP addresses and 6 were part of a set of 3 repeated IP addresses.

I compared the responses and the demographic information for these repeats to determine whether the data was repeated. Most returned different answers, years, and majors, leading me to believe that they were simply done on the same computer, i.e. in the library.

Only four pairs repeated their demographic answers, made obvious by the fact that "Major" was an open-ended question. Students wrote this out with different abbreviations and capitalizations, or potentially had multiple majors or minors creating a specific combination. For these I kept the initial set of responses and removed the second from the data set, leaving 802 usable responses.

Overall Findings

By looking at the survey's findings by section, we can come to some basic initial conclusions. Here we see the overall results to give us a sense of the sample.

<u>Defining Sustainability</u>

Though students had a more broad understanding of sustainability than I had anticipated, they still connected it more to its environmental aspects than other aspects.

To understand how students define sustainability, the survey asked to what extent they believed each of fourteen terms is an aspect of sustainability on a scale from 1 to 7, 7 being "very much" (Table 1a). By doing a factor analysis I determined that students' responses generally fell into three themes: environment, economy, social justice. This means that students who responded in one way to one question in a theme, usually answered similarly for another question in that theme. Environment consists of these terms:

- Energy conservation
- Nature
- Long-term approach to global problems
- Climate change
- Environment

Economy consists of:

- Economic viability
- Economy

Social justice consists of:

- Diversity
- Civic engagement
- Social equity
- Human rights
- Social justice
- Ethics
- Health

Since each of these themes has a different number of terms associated with it, I averaged the responses. With this average I found that students identified sustainability most with environment, second with economy, and least with social justice.

- Environment (mean: 6.22, standard deviation: .96)
- Economy (5.51, 1.23)
- Social justice (5.14, 1.19)

On an average that ranged from 1 to 7, the means show that the scores are all relatively high. This means that though students clearly thought of environment first, they highly associated economy and social justice with sustainability as well.

Perceived Impact of Behaviors on Environmental Sustainability

Students also predictably found recycling to be the most impactful action for the achievement of environmental sustainability. They also found eating less beef to be significantly less important than the rest of the actions.

To test students' perceptions of common behaviors meant to reduce global warming, I asked them to rate six behaviors on each one's importance to achieving environmental sustainability on a scale from 1 to 7, 7 being "very important." These behaviors were adapted from a list in a previous study (Bonini and Oppenheim 2008). The original study ranked the

behaviors by effectiveness to reduce global warming in this order from most to least effective: drive more fuel-efficient car, improve home insulation, east less beef, drive less, recycle, use energy-efficient appliances, adjust thermostats, fly less.

Students rated them in this order overall: recycling cans, bottles, and paper; buying energy-efficient appliances; using a fuel-efficient car; improving home insulation; adjusting thermostat up in the summer, down in the winter; eating less beef (Table 1b).

- Recycling cans, bottles, and paper (mean: 6.23, standard deviation: 1.11)
- Buying energy-efficient appliances (6.06, 1.14)
- Using a fuel-efficient car (5.94, 1.24)
- Improving home insulation (5.84, 1.20)
- Adjusting thermostat up in the summer, down in the winter (5.63, 1.35)
- Eating less beef (4.20, 1.93)

With a range from 1 to 7 for all sub-questions, we can see that all behaviors fall above the midpoint, meaning that students do recognize them as meaningful behaviors. Eating less beef is significantly lower than the rest comparatively though.
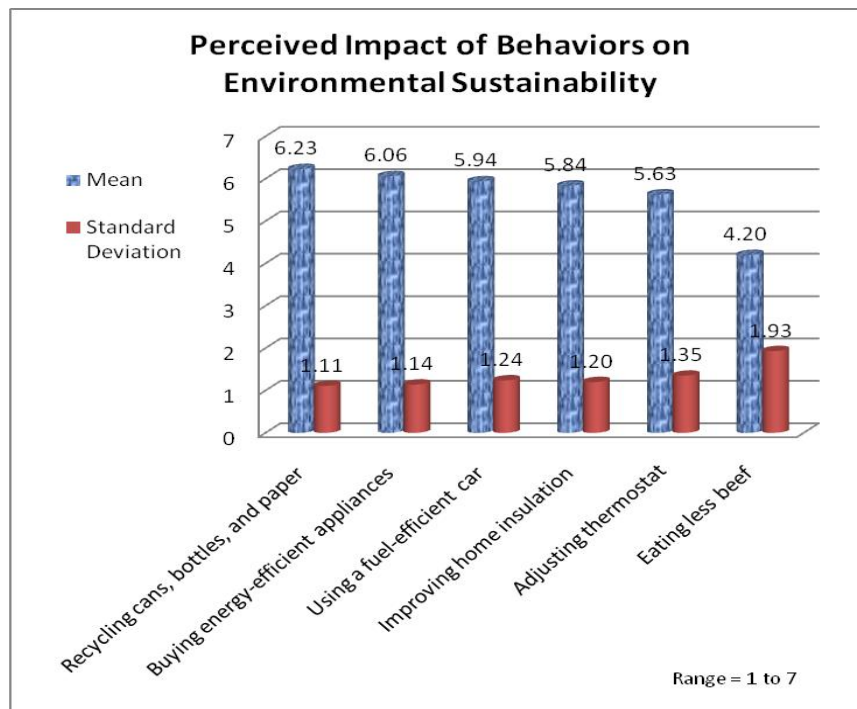
<u>Sustainable Behavior Practices</u>

Students' responses to sustainable behavior questions align with the findings of previous questions: They recycled most and adjusted their diet least.

Behaviors were also categorized through factor analysis into five themes[3] and averaged due to varying number of sub-questions per theme (Table 1e).

The reduce, reuse, recycle theme consists of:

- Recycle (paper, cardboard, cans, phone books, etc.)
- Use permanent plates, silverware and coffee mugs instead of disposables
- Take shorter showers
- Use e-mail to cut down on paper usage
- Turn lights off when leaving a room
- Double-sided printing
- Reuse scrap paper as note paper
- Use CFL (compact florescent lights) instead of incandescent light bulbs
- Unplug chargers and appliances when not in use
- Turn water off while soaping my hands, shaving, or brushing teeth
- Wash and dry larger loads of laundry
- Air dry clothes

The support theme consists of:

- Buy fairly traded products (coffee, chocolate, rice, etc.)
- Wash clothes in colder water (warm instead of hot, or cold instead of warm)
- Buy local products
- Donate re-usable goods to those in need (food drives, Goodwill, cell phone emergency re-use programs)

The transportation theme consists of:

- Minimize travel by car
- Use public transit (bus, trains) instead of cars
- Walk or bike instead of using car or public transit

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[3] Civic Engagement and Reduce, Reuse, Recycle each came out with two themes. Since they were significantly correlated, they were each combined into a single theme.

The civic engagement theme consists of:

- Participate in the activities of local environmental groups
- Vote for political figures on the basis of their environmental positions
- Write a letter to a public official or business leader about environmental concerns
- Talk to friends, family, or associates about environmental issues
- Talk to friends, family, or associates about social issues
- Educate myself about environmental issues
- Educate myself about social issues
- Volunteer
- Participate in organizations focused on social justice
- Participate in organizations focused on diversity
- Participate in organizations focused on the environment

The diet theme consists of:

- Eat less beef
- Eat less poultry
- Eat less fish
- Eat less dairy

The themes ranked with reduce, reuse, recycle as the most engaged in activity followed by support, then transportation, civic engagement, and diet.

- Reduce, reuse, recycle (3.52, .60)
- Support (3.23, .75)
- Transportation (2.95, .92)
- Civic engagement (2.77, .78)
- Diet (2.30, 1.08)

The averaged range for all of these themes was 1 to 5, except for reduce, reuse, recycle, which had a range of 1.5 to 5. This shows that none of the themes were exceptionally strong.

Sustainable Behaviors
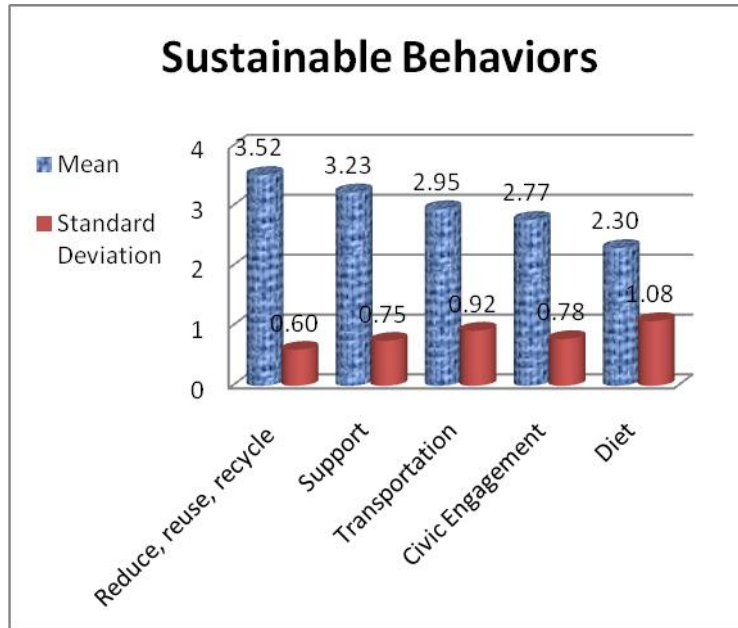
Motivation toward the Environment

To understand why students may be motivated to positively impact the environment, I used the Motivation toward the Environment Scale from a previous study (Pelletier 1998).

Students said they primarily helped the environment because of identified motivation. Intrinsic motivation had the second highest mean (Table 1c). All of these sub-questions had a range of 4 to 28.

- Identified motivation (mean: 22.09, standard deviation: 4.44)
- Intrinsic motivation (18.61, 5.31)
- Introjected motivation (17.90, 5.82)
- Integrated motivation (17.22, 6.30)
- External regulation (9.95, 5.41)
- Amotivation (9.49, 5.54)

Motivation toward Environment
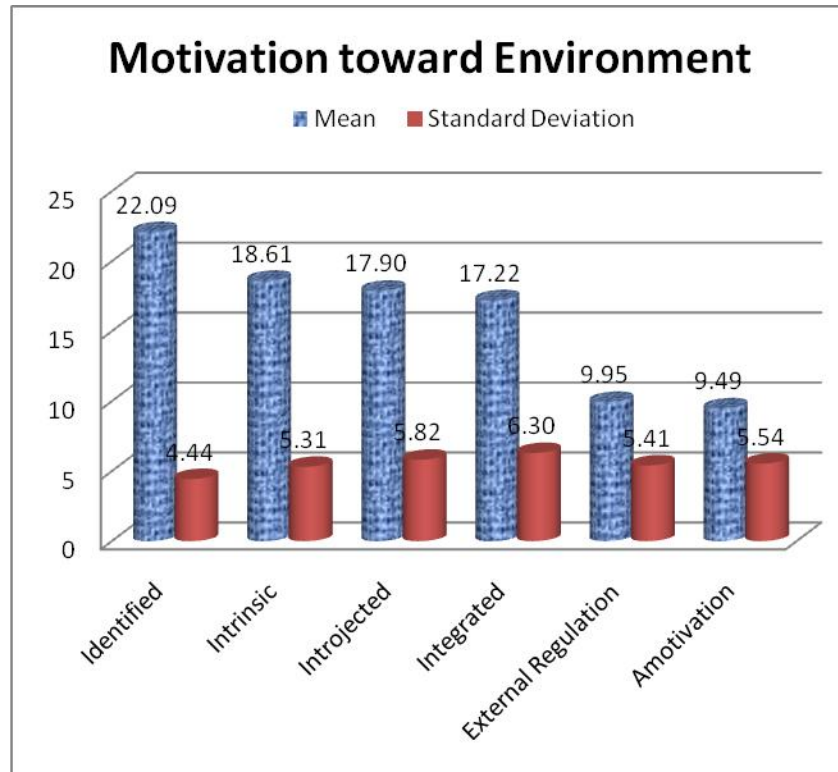
Identified motivation is an external motivation, but "reflects a conscious valuing of a behavioral goal or regulation, such that the action is accepted or owned as personally important" (Ryan and Deci 2000:72). The majority of students fell into this category. Students therefore realize the importance of the outside regulations set forth for them, and thus have somewhat internalized them. Their intention to treat the environment well is both for extrinsic and intrinsic satisfaction.

Intrinsic motivation is an internal, personal motivation, or "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (Ryan and Deci 2000:71). As this is the second largest category students fell into, we can see their personal satisfaction and internal drive to sustain the environment. This is purely their own enthusiasm and awareness that compels them to help the environment.

Introjected motivation is an external motivation to "avoid guilt or anxiety or attain ego enhancements such as pride" (Ryan and Deci 2000:72). It is "taking in a regulation but not fully accepting it as one's own." This is brought on perhaps by peer pressure. Students in this category are most concerned with other people's opinions of them. They carry out their actions to benefit their own social standing, not the environment.

Integrated motivation indicates a full assimilation of regulations, meaning "they have been evaluated and brought into congruence with one's other values and beliefs" (Ryan and Deci 2000:73). Though this is similar to intrinsic motivation it is still extrinsic because actions are "done to attain separable outcomes rather than for their inherent enjoyment." These students understand the impact their actions have and realize that treating the environment well is in line with their actions. They do good for the environment, not for their own benefit, but because they know it is the right thing to do, regardless of their own enjoyment.

External regulation is an outside, impersonal motivation to "satisfy external demand or reward contingency" (Ryan and Deci 2000:72). Students who fall in this category get no personal satisfaction from improving the environment. The good they may do is simply to fall a rule or law, or because someone insists they do. This would include not littering on the highway in order to avoid a fine.

Amotivation is "the state of lacking the intention to act" and "results from not valuing an activity" (Ryan and Deci 2000:72). This means the person is simply conducting the action with no motivation or goal. An action that benefits the environment would be like any other action. If a student's environmentally-friendly action happened to fall in line with what they were already doing then they would do it. But they would not go out of their way to help the environment.

In analyzing where students fell in the different types of motivation, it is apparent that students understand the overall, external importance of sustaining the environment, but also feel a great deal of personal satisfaction as incentive to do good for the environment.

Few students were dominantly motivated by external regulation or amotivation, meaning, in general, they actually value salvaging the environment to some extent. Intrinsic motivation is logically more reliable than external motivation because it does not require an outside catalyst. Students who are intrinsically motivated to do something will do it regardless of whether someone else knows about it or rewards them for it. This has more sound continuity than peer pressure, rewards or punishments, which could change, run out, or lose their appeal.

Motivation Scale: External to Internal

Amotivation | External Regulation | Introjected | Identified | Integrated | Intrinsic

External Motivation → Internal Motivation

Adapted from Figure 1 in Ryan and Deci 2000
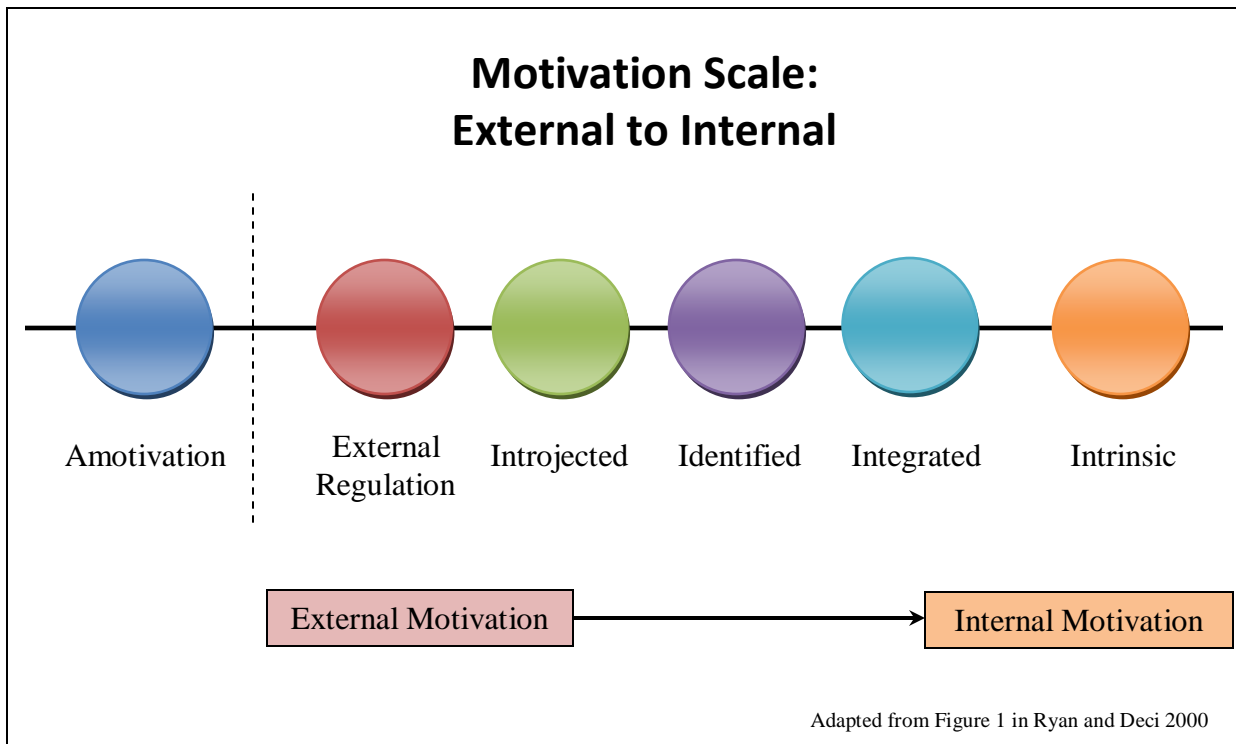
Environmentally Contingent Self-Esteem

Students' self-esteem was not highly influenced by their environmental or sustainable actions.

Students' were asked to rate how much their self-esteem depends on their pro-environmental or sustainable actions. The environmental scale was developed in a previous study, but the sustainable scale was adapted from the environmental one (Brook 2005).

The results for these questions were averaged since the environmental scale had ten questions, while the sustainable scale had five. With a range of 1.4 to 7, the environmental scale had a mean of 3.94 and a standard deviation of .93 (Table 1d). With a range of 1 to 7, the sustainable scale had a mean of 4.18 and a standard deviation of .94. These means fall above the 3.5-midpoint of the scale. These moderate numbers show that students generally base their self-worth on living sustainably and being environmentally conscious to some extent. This could mean that students do have a general awareness and compassion for the environment and sustainability, but overall they are not necessarily the most eager enthusiasts either.

Behavioral Effects

By connecting the data from each of the basic sections, we come up with more compelling results. Here we see how perceptions, motivation, and self-worth can impact students' sustainable behaviors. The five behavior themes (reduce, reuse, recycle; support; transportation; civic engagement; and diet) were linearly regressed on indices of perception, motivation, and self-worth (Tables 2, 3, 4).[45]

Effects of Perceived Impact on Behavior

Students base their actions on their perceived impact of those actions. Students ranked eating less beef as the least environmentally impactful of six behaviors, with a mean of 4.20. Students also ranked eating less beef, a sub-behavior under the diet theme, fourth from last in sustainable behaviors they participate in, with a mean of 3.58 (Table 1e). Regression analysis shows that students' perceived impact of eating less beef has a significant effect on students' behavior to eat less beef with a significance level of .000 and a Beta of .550 (Table 2). In general, students who do not see reducing their beef consumption as an impactful action to achieving environmental sustainability do not reduce their beef consumption.

Students do, however, see recycling as the most impactful action, and place recycling in the top two most common behaviors. The sub-behavior "recycle (paper, cardboard, cans, phone books, etc.)," which was part of the reduce, reuse, recycle behavior theme, had a mean of 4.30 and had 67.1 percent of respondents answer 4 or 5 on a 1 to 5 scale with 5 being "I always do

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[4] Even though the time reference for the behavior and other indicators was not available, I am assuming for this analysis that behavior is a product of perception, motivation, and self-worth.

[5] Significant impacts from linear regressions for the behavioral themes on demographics can be found in Table 7.

this."[6] Regression analysis also shows that students' perceived impact of recycling cans, bottles, and paper has a significant effect on students' behavior to recycle (paper, cardboard, cans, phonebooks, etc.) with a significance level of .000 and a Beta of .344 (Table 2). Therefore students who see recycling as an impactful action will generally increase their recycling behaviors.

The perceived impact of eating less beef had a significant effect on every behavior theme, except reduce, reuse, recycle.

- Support (p-value: .024, Beta .103)
- Transportation (.033, .100)
- Civic engagement (.000, .204)
- Diet (.000, .485)

As eating less beef had the considerably lowest mean of the perceived impacts, this could mean that the more students do understand it as a high-impact behavior, the better informed they are about sustainable practices. These students could theoretically be better informed about the higher mean behaviors and thus, more likely to participate in them.

None of the indicators of perception besides eating less beef had a significant positive impact on any of the behavioral themes. For dietary behavior especially, this suggests that perceptions of impact do not translate to behavior if there is no direct connection, as there is between eating less beef and sustainable diet.

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[6] "Turn lights off when leaving a room" had a higher mean at 4.32 and a lower percent of 4 and 5 responses at 66 percent than "recycle (paper, cardboard, cans, phone books, etc.)."

Motivation's Effect on Behaviors

Though identified motivation toward the environment was the strongest among these students, integrated motivation was the only one to have a significant effect on all five sustainable behaviors. Integrated motivation was significant at the .000 level for all behaviors (Table 3):

- Reduce, reuse, recycle (p-value: .000, Beta: .253)
- Support (.000, .277)
- Transportation (.000, .227)
- Civic engagement (.000, .376)
- Diet (.000, .248)

This means that students who had integrated motivation toward the environment were more likely to participate in these sustainable behaviors. Students who have integrated motivation are actually drawn to action, though students scored highest on identified motivation believing that is what drives them. Students who have integrated motivation are more likely to engage in these environmental actions than those who are alternatively motivated toward the environment. Unless students fully integrate external regulations with their own personal values, they are not likely to participate in sustainable behaviors.

External Regulation was the only other motivation to have a significant impact on any behavior with a significance level of .015 and a Beta of .114 on the civic engagement behavior theme (Table 3). This could be because the topic is so new students have yet to internalize it. It is still unfamiliar to them and thus, has the greatest impact when regulated through external motivators.

Contingent Self-Worth's Effect on Behaviors

Brook's previous study found that "participants tend to exert more effort on tasks the more they base their self-esteem on a domain relevant to the task" (2005:24). Therefore, students will act positively toward the environment and sustainability to improve or maintain their self-worth as much as their self-worth is contingent on the environment or sustainability.

Only one behavior was significantly affected by a self-worth measure. Environmental contingency of self-worth had a significant impact on civic engagement with a significance level of .018 and a Beta of .137 (Table 4). Students who derive their self-worth from environmental matters are more likely to participate in behaviors that fall in the civic engagement theme.

In order for students to strongly derive their self-worth from environmental matters, the more well-educated they likely need to be about these matters. These students perhaps understand the great impact they can have through civic engagement, by affecting policy and influencing the actions of others.

There are several possible reasons for self-worth having such a minimal impact on students' other sustainable behaviors. As college students, they might have a broader sense of self-worth that does not factor environmental or sustainable means in as much. The uncertainty of the time-ordering might have clouded or obscured results as well.

Dampening effects

Though there are many positive significant causal relationships in this data, negative causal relationships can say a lot, too.

It was interesting to observe that the perceived impact of recycling cans, bottles, and paper had a significant, but reversed impact on the transportation behavior theme, with a

significance level of .051 and a Beta of -.105, and the civic engagement behavior theme, with a significance level of .012 and a Beta of -.016 (Table 2). The stronger students' perception that recycling was a sustainable practice, the less likely they were to engage in sustainable transportation or civic engagement actions. Though students believe recycling is a high impact behavior, in reality, it is not. The more they believe recycling to be a high impact behavior, the less likely they are to engage in other sustainable activities that require more effort or that have a less obvious sustainable impact. Since recycling has become such an apparent symbol of environmentalism, those who think it has a high impact could be the less informed students who only know these mainstream ideas. These less informed students would be less aware of alternate sustainable behaviors and perhaps less inclined to put extra effort into those less conventional behaviors.

Introjected motivation also had a significant negative impact on the transportation behavior theme with a significance level of .033 and a Beta of -.125 (Table 3). The more introjectedly (or externally) motivated students were, the less likely they were to engage in sustainable transportation. This could be because public transportation is less commonly used in this area. It is normal for people to drive a car, rather than walk or take the bus, to most places in the majority of California. And though hybrid and electric cars are becoming more popular, they are still the exception not the rule. Students therefore, feel less outside pressure to practice sustainable transportation practices.

Theoretical Implications

My first hypothesis that fewer students are able to correctly define sustainability is confirmed. Students highly associated sustainability with environment, but mostly did not

understand the equivalence economy and social justice had. If students had a more clear understanding of sustainability, they might be more inclined to act in such a way. Students must know what sustainability is in order to partake in a culture of sustainability. Informing students about the full definition of sustainability would allow them to make their own assumptions and make informed decisions about their beliefs and actions.

Confirming this hypothesis also confirms the theory of Structural Functionalism. As sustainability becomes a more prevalent issue, universities are moving to integrate it into their curriculum and policies. This means that though most students are not already very informed about sustainability, universities are making changes to rectify that. This means that students rely on necessity to inform themselves about certain topics. In the future, if a university wishes for its students to be educated about something, it must take steps to make it mandatory or apparent.

My second hypothesis that students would be more externally motivated was rejected. The highest means of motivation toward the environment fell on the intrinsic half of the motivation scale. Students do not rely on outside pressure or rules to dictate their environmental actions. To guide these actions, it would be more logical to highlight the intrinsic benefit they can bring. At a Jesuit university, where social justice is emphasized, this selflessness is perhaps already part of the culture and a characteristic of the student body.

By not confirming this hypothesis, the concept of "identity" was also not confirmed in this instance. This could mean that college-age students do not rely as much on groups and peer pressure to dictate their actions. In future endeavors, it would be best to influence students through their own internal motivation and satisfaction, rather than through rules or peer acknowledgement.

My third hypothesis that students would act upon their perceptions of behaviors' sustainable impact was confirmed. Students who believed recycling was a high-impact behavior and students who believed eating less beef was a low-impact behavior, acted congruently. Attention, therefore, should be paid to how students perceive the impacts of behaviors. Educating students to better inform their perceptions can influence their actions.

Confirming this hypothesis also confirms the theory of Symbolic Interactionism. This means that symbols have a very strong influence on students' perceptions. Symbols, therefore, are a powerful way for universities to communicate information to their students. Clear perceptions of these symbols are also important to get the desired action out of students.

Applied Lessons

As the literature suggested, sustainable lifestyles are best taught through culture, and culture is best infused when it is saturated from all angles. This study suggests that students need to be well-informed, have intrinsic motivation, and have correct perceptions about their sustainable actions to live more sustainable lifestyles. Santa Clara University would best cultivate a strong culture of sustainability by making it a part of as many aspects of campus life as possible.

The university can do this by offering more sustainability classes throughout different fields. It can integrate sustainability into the core curriculum. Sustainability should not only be the direct focus of new classes, but integrated into units of other classes.

Sustainability should be considered an aspect of the mission of the university. In some ways it already is through social justice, helping the poor, and more recently, being

environmentally friendly. The university should consciously use sustainable terminology more, and define the term more clearly and publicly.

Bon Appetit locations should have signs explaining what food is most sustainable and why (including direct harm to the environment, to the industry, to the producers/farmers).

Dorms could have guidelines for sustainable living posted (include specific, student-related ideas). Dorm bathrooms could also have signs posted encouraging students to be conscious of their water, paper, and energy use. A list of questions students can ask themselves in making sustainable decisions could also be posted in the dorms and around campus to remind students to practice sustainable decision-making.

Activities such as band nights, concerts, movie nights, ice cream socials, which the university already hosts, could be sustainable, logistically and thematically. Sustainable foods could be served. Hosts could make energy-conscious use of venues. Events could include educational messages. The event could even surround furthering sustainable themes (i.e. diversity, social justice movies) or supporting a sustainable cause.

The university can continue sustainable building and use of facilities around campus. This includes turning off lights, equipment, and climate control in classrooms and buildings after hours, as well as turning the temperature down in colder months and up in the hotter months. Replacing dorm washers, dryers, and kitchen appliances with more efficient appliances, would also further the sustainable mission, be practical for students, and be financially sound.

Students should have more readily accessible options to practice sustainability in their academics. This can include turning in papers online, via e-mail or Angel, or at least encouraged single-spaced, double-sided printing. Many professors still ask for paper copies though the university has implemented the infrastructure to move to such electronic methods.

The university can promote a sustainability campaign where students learn the difference between sustainability and environmentalism. This can include student competitions. Pit clubs, chartered student organizations, Residential Learning Communities, or dorm floors against each other. Competitions can include:

- Traditional trash audit (which dorm recycles most)
- Community service evaluation (students log their volunteer hours)
- Voting evaluation (how many students are registered to vote or are active voters)
- Diversity evaluation (using several different measures for diversity, not purely ethnicity)
- Energy evaluation (how much does each dorm use proportionally, divided by person)
- Food/clothes drive competition

This can be evaluated every quarter, encouraging students to improve their scores over the course of the year. Chartered student organizations can have a similar evaluation and competition in each office, adjusting for the size, mission, and activities of each organization.

Future Research

Future studies could further these findings. To expand on these results, a time-ordering component could be added to the questions to get a better sense of the causal relationships between the variables.

The civic engagement behavior theme had some unexpected results. Further study into this particular theme could better explain these results, what sets civic engagement apart from other behaviors, and how this could be used in the future for research and development of culture.

It can also be noted that the business school had the lowest proportional response rate compared to its population. Future studies could attempt to find ways to reach more business students in order to attain a more accurate sample.

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Appendix A: Survey

1. Using the scale below, indicate to what extent you consider each of the following to be an aspect of sustainability:

1	2	3	4	5	6	7
Not at all			**Moderately**			**Very much**

_____ Diversity
_____ Civic engagement
_____ Energy conservation
_____ Economic viability
_____ Nature
_____ Social equity
_____ Long-term approach to global problems
_____ Climate change
_____ Human rights
_____ Economy
_____ Environment
_____ Social justice
_____ Ethics
_____ Health

2. Using the scale below, rate the importance of each of the following actions for achieving environmental sustainability:

1	2	3	4	5	6	7
Not at all			**Moderately**			**Very important**

_____ Buying energy-efficient appliances
_____ Improving home insulation
_____ Adjusting thermostat up in the summer, down in the winter
_____ Recycling cans, bottles and paper
_____ Using a fuel-efficient car
_____ Eating less beef

3. Using the scale from 1-7 below, please indicate the degree to which the proposed reasons correspond to your reasons for doing environmentally-sustainable behaviors.

Does not correspond at all			**Corresponds moderately**			**Corresponds exactly**
1	2	3	4	5	6	7

_____ 1. For the pleasure I experience while mastering new ways of helping the environment.
_____ 2. Honestly, I don't know; I truly have the impression that I'm wasting my time doing things for the environment.
_____ 3. For the pleasure I experience when I find new ways to improve the quality of the environment.

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___ 4. Because it is a reasonable thing to do to help the environment.
___ 5. Because I like the feeling I have when I do things for the environment.
___ 6. I don't know really; I can't see what I'm getting out of it.
___ 7. I think I'd regret not doing something for the environment.
___ 8. I wonder why I'm doing things for the environment; the situation is simply not improving.
___ 9. For the pleasure I get from contributing to the environment.
___ 10. Because it's a sensible thing to do in order to improve the environment.
___ 11. Because it's a way I've chosen to contribute to a better environment.
___ 12. Because other people will be upset if I don't.
___ 13. For the recognition I get from others.
___ 14. Because I would feel bad if I didn't do anything for the environment.
___ 15. Because taking care of the environment is an integral part of my life.
___ 16. Because my friends insist that I do it.
___ 17. Because it seems to me that taking care of myself and taking care of the environment are inseparable.
___ 18. Because I would feel guilty if I didn't.
___ 19. Because being environmentally-conscious has become a fundamental part of who I am.
___ 20. Because it is part of the way I've chosen to live my life.
___ 21. Because I would feel ashamed of myself if I was doing nothing to help the environment.
___ 22. Because I think it's a good idea to do something about the environment.
___ 23. To avoid being criticized.
___ 24. I don't know; I can't see how my efforts to be environmentally-conscious are helping the environmental situation.

4. Please respond to each of the following statements using the scale below. If you haven't experienced the situation described in a particular statement, please answer how you think you would feel if that situation occurred.

1	2	3	4	5	6	7
Strongly disagree	**Disagree**	**Disagree somewhat**	**Neutral**	**Agree somewhat**	**Agree**	**Strongly agree**

___ 1. My self-esteem is influenced by how good or bad an environmentalist I am.
___ 2. Supporting environmental causes gives me a sense of self-respect
___ 3. I feel badly about myself when I think about how my lifestyle hurts the environment.
___ 4. My opinion about myself isn't tied to being an environmentalist.
___ 5. My self-esteem gets a boost when I feel like a good environmentalist.
___ 6. My self-esteem drops if I feel like a bad environmentalist.
___ 7. Being an environmentalist is related to my sense of self-worth.
___ 8. I feel better about myself when I know I'm taking action to benefit the environment.
___ 9. When I am not able to help environmental causes, my self-esteem suffers.
___ 10. My overall opinion of myself is unrelated to how good or bad an environmentalist I am.

5. Please respond to each of the following statements using the scale below. If you haven't experienced the situation described in a particular statement, please answer how you think you would feel if that situation occurred.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Strongly agree

___ 1. Working toward sustainability gives me a sense of self-respect.

___ 2. I feel badly about myself when I think about how unsustainable my lifestyle is.

___ 3. My self-esteem drops if I feel like my lifestyle is unsustainable.

___ 4. I feel better about myself when I know I'm taking action to increase the sustainability of my lifestyle.

___ 5. My overall opinion of myself is unrelated to how sustainable my lifestyle is.

6. Indicate the extent to which you engage in each of the following activities by assigning the appropriate number from the scale below. Please be honest.

1	2	3	4	5
I never do this		I try to do this		I always do this

____ Recycle (paper, cardboard, cans, phone books, etc.)

____ Use permanent plates, silverware and coffee mugs instead of disposables

____ Take shorter showers

____ Use e-mail to cut down on paper usage

____ Turn lights off when leaving a room

____ Participate in the activities of local environmental groups

____ Vote for political figures on the basis of their environmental positions

____ Buy fairly traded products (coffee, chocolate, rice, etc.)

____ Double-sided printing

____ Reuse scrap paper as note paper

____ Use CFL (compact florescent lights) instead of incandescent light bulbs

____ Unplug chargers and appliances when not in use

____ Wash clothes in colder water (warm instead of hot, or cold instead of warm)

____ Turn water off while soaping my hands, shaving, or brushing teeth

____ Wash and dry larger loads of laundry

____ Air dry clothes

____ Buy local products

____ Eat less beef

____ Eat less poultry

____ Eat less fish

____ Eat less dairy

____ Write a letter to a public official or business leader about environmental concerns

____ Talk to friends, family, or associates about environmental issues

____ Talk to friends, family, or associates about social issues

____ Educate myself about environmental issues

____ Educate myself about social issues
____ Minimize travel by car
____ Use public transit (bus, trains) instead of cars
____ Walk or bike instead of using car or public transit
____ Volunteer
____ Participate in organizations focused on social justice
____ Participate in organizations focused on diversity
____ Participate in organizations focused on the environment
____ Donate re-usable goods to those in need (food drives, Goodwill, cell phone emergency re-use programs)

7. What is your gender?
___ Female
___ Male

8. What is your age?
___ 16 or younger
___ 17
___ 18
___ 19
___ 20
___ 21
___ 22
___ 23 or older

8. What is your academic class?
___ First-year student
___ Second-year student
___ Third-year student
___ Fourth-year student
___ Fifth-year student

9. What school are you in?
___ Arts & Sciences
___ Business
___ Engineering

10. What is your major(s)/minor(s)?

_____ _____

Appendix B: Invitation E-mail

Want a chance to win a free iPod?

Need a reason to procrastinate for a few minutes?

Want to help the university be more sustainable?

Please take our survey about sustainability at Santa Clara University. The survey is completely anonymous and if you choose to participate you will be entered into a raffle to win an iPod shuffle!

The results of the survey will be used by the Office of Sustainability and the Markkula Center for Applied Ethics to understand what SCU students think about sustainability. A report about the survey will also be posted on the ethics website as part of a project for the Environmental Ethics Fellowship.

You may choose to skip any question or stop the survey at any time with no penalty, and you can still enter the raffle.

All you need to do is follow this link
https://www.surveymonkey.com/s.aspx?sm=_2fg78_2bFPA41_2bpcTPvul7PTw_3d_3d

Participation in the survey will be considered consent to the use of anonymous survey results.

If you have any questions or concerns please contact Sophie Asmar, Environmental Ethics Fellow, at SAsmar@scu.edu or David DeCosse, Director of Campus Ethics Programs, at DDeCosse@scu.edu or (408) 554-5715.

Thank you for your participation.

Sincerely,

Sophie Asmar

Environmental Ethics Fellow
Markkula Center for Applied Ethics
SAsmar@scu.edu

Appendix C: Raffle

Raffle

　　　At the end of the survey, participants were told that raffle contact information was kept separate from their survey responses. If they wished to participate in the raffle, they were directed to another page on the Santa Clara University Sustainability website where they were asked for their name and e-mail address.
　　　Once the survey period was over, all raffle participants were listed in an Excel spreadsheet. Duplicates were deleted. Using Excel's random function, the person at the top of the randomized list was chosen as the raffle winner. She was notified via e-mail and asked to pick up her iPod from the Markkula Center for Applied Ethics.

Notification e-mail

Dear <winner>,

Thank you very much for participating in the Environmental Ethics survey!

You have been chosen as our raffle winner!

Please come by Markkula Center for Applied Ethics in the Arts and Sciences building to pick up your iPod shuffle.

Thanks, again!

Sincerely,

Sophie Asmar
SAsmar@scu.edu

and

David DeCosse
DDecosse@scu.edu

TABLE 1. Descriptive Profile of Santa Clara University Undergraduates 2009:
Aspects of Sustainability, Impact of Behaviors on Environmental Sustainability, Motivation
toward the Environment, Self-Worth, Sustainable Behaviors

Table 1a. Aspects of Sustainability- Descriptive Profile of Santa Clara University
Undergraduates 2009: Environment, Economy, Social Justice

Environment

	N	Minimum	Maximum	Mean	Std. Deviation
Energy conservation	789	1	7	6.32	1.093
Nature	790	1	7	6.18	1.175
Long-term approach to global problems	789	1	7	6.31	1.120
Climate change	787	1	7	5.87	1.386
Environment	786	1	7	6.41	1.018
Valid N (listwise)	776				

Economy

	N	Minimum	Maximum	Mean	Std. Deviation
Economic viability	787	1	7	5.56	1.333
Economy	789	1	7	5.46	1.375
Valid N (listwise)	785				

Social Justice

	N	Minimum	Maximum	Mean	Std. Deviation
Diversity	788	1	7	4.47	1.749
Civic Engagement	784	1	7	5.20	1.412
Social equity	793	1	7	4.97	1.575
Human rights	787	1	7	5.09	1.587
Social justice	787	1	7	5.05	1.572
Ethics	788	1	7	5.55	1.395
Health	788	1	7	5.63	1.368
Valid N (listwise)	765				

Table 1b. Impact of Behaviors on Environmental Sustainability- Descriptive Profile of Santa Clara University Undergraduates 2009

Impact on Environment

	N	Minimum	Maximum	Mean	Std. Deviation
Buying energy efficient appliances	794	1	7	6.06	1.141
Improving home insulation	792	1	7	5.84	1.205
Adjusting thermostat up in the summer, down in the winter	789	1	7	5.63	1.350
Recycling cans, bottles and paper	794	1	7	6.23	1.116
Using a fuel efficient car	793	1	7	5.94	1.244
Eating less beef	790	1	7	4.20	1.935
Valid N (listwise)	780				

Table 1c. <u>Motivation toward the Environment-</u> Descriptive Profile of Santa Clara University Undergraduates 2009: Identified Motivation, Intrinsic Motivation, Introjected Motivation, Integrated Motivation, External Regulation, Amotivation

Identified Motivation

	N	Minimum	Maximum	Mean	Std. Deviation
Because it is a reasonable thing to do to help the environment.	727	1	7	5.74	1.218
Because it's a sensible thing to do in order to improve the environment.	727	1	7	5.60	1.312
Because it's a way I've chosen to contribute to a better environment.	724	1	7	5.29	1.387
Because I think it's a good idea to do something about the environment.	723	1	7	5.48	1.376
Valid N (listwise)	710				

Intrinsic Motivation

	N	Minimum	Maximum	Mean	Std. Deviation
For the pleasure I experience while I am mastering new ways of helping the environment.	731	1	7	4.44	1.514
For the pleasure I experience when I find new ways to improve the quality of the environment.	729	1	7	4.65	1.490
Because I like the feeling I have when I do things for the environment.	726	1	7	4.96	1.515
For the pleasure I get from contributing to the environment.	725	1	7	4.55	1.566
Valid N (listwise)	719				

Introjected Motivation

	N	Minimum	Maximum	Mean	Std. Deviation
I think I'd regret not doing something for the environment.	723	1	7	4.81	1.705
Because I would feel bad if I didn't do anything for the environment.	725	1	7	4.67	1.719
Because I would feel guilty if I didn't.	724	1	7	4.17	1.727
Because I would feel ashamed of myself if I was doing nothing to help the environment.	724	1	7	4.29	1.788
Valid N (listwise)	710				

Integrated Motivation

	N	Minimum	Maximum	Mean	Std. Deviation
Because taking care of the environment is an integral part of my life.	722	1	7	4.33	1.715
Because it seems to me that taking care of myself and taking care of the environment are inseparable.	720	1	7	4.20	1.825
Because being environmentally-conscious has become a fundamental part of who I am.	726	1	7	4.18	1.821
Because it is part of the way I've chosen to live my life.	724	1	7	4.52	1.771
Valid N (listwise)	710				

External Regulation

	N	Minimum	Maximum	Mean	Std. Deviation
Because other people will be upset if I don't.	725	1	7	2.79	1.670
For the recognition I get from others.	721	1	7	2.42	1.572
Because my friends insist that I do it.	724	1	7	2.39	1.539
To avoid being criticized.	722	1	7	2.42	1.573
Valid N (listwise)	710				

Amotivation

	N	Minimum	Maximum	Mean	Std. Deviation
Honestly, I don't know; I truly have the impression that I'm wasting my time doing things for the environment.	729	1	7	2.30	1.534
I don't really know; I can't see what I'm getting out of it.	727	1	7	2.29	1.552
I wonder why I'm doing things for the environment; the situation is simply not improving.	727	1	7	2.59	1.633
I don't know; I can't see how my efforts to be environmentally-conscious are helping the environmental situation.	725	1	7	2.35	1.616
Valid N (listwise)	717				

Table 1d. <u>Self-Worth-</u> Descriptive Profile of Santa Clara University Undergraduates 2009: Environmental Self-Worth, Sustainable Self-Worth

Environmental Self-Worth

	N	Minimum	Maximum	Mean	Std. Deviation
My self-esteem is influenced by how good or bad an environmentalist I am.	695	1	7	3.07	1.648
Supporting environmental causes gives me a sense of self-respect	694	1	7	4.41	1.535
I feel badly about myself when I think about how my lifestyle hurts the environment.	694	1	7	4.19	1.658
My opinion about myself isn't tied to being an environmentalist.	692	1	7	4.60	1.718
My self-esteem gets a boost when I feel like a good environmentalist.	694	1	7	4.24	1.533
My self-esteem drops if I feel like a bad environmentalist.	694	1	7	3.42	1.589
Being an environmentalist is related to my sense of self-worth.	688	1	7	3.37	1.658
I feel better about myself when I know I'm taking action to benefit the environment.	692	1	7	4.66	1.548
When I am not able to help environmental causes, my self-esteem suffers.	692	1	7	2.93	1.549
My overall opinion of myself is unrelated to how good or bad an environmentalist I am.	693	1	7	4.60	1.772
Valid N (listwise)	672				

Sustainable Self-Worth

	N	Minimum	Maximum	Mean	Std. Deviation
Working toward sustainability gives me a sense of self-respect.	677	1	7	4.52	1.495
I feel badly about myself when I think about how unsustainable my lifestyle is.	679	1	7	3.96	1.636
My self-esteem drops if I feel like my lifestyle is unsustainable.	680	1	7	3.32	1.598
I feel better about myself when I know I'm taking action to increase the sustainability of my lifestyle.	677	1	7	4.60	1.533
My overall opinion of myself is unrelated to how sustainable my lifestyle is.	677	1	7	4.57	1.710
Valid N (listwise)	670				

Table 1e. Sustainable Behaviors- Descriptive Profile of Santa Clara University Undergraduates 2009: Reduce, Reuse, Recycle; Civic Engagement; Support; Transportation; Diet

Reduce, Reuse, Recycle Behaviors

	N	Minimum	Maximum	Mean	Std. Deviation
Recycle (paper, cardboard, cans, phone books, etc.)	665	1	5	4.30	.868
Use permanent plates, silverware and coffee mugs instead of disposables	667	1	5	3.77	.993
Take shorter showers	667	1	5	3.01	1.189
Use e-mail to cut down on paper usage	664	1	5	3.99	1.041
Turn lights off when leaving a room	665	1	5	4.32	.876
Double-sided printing	663	1	5	2.95	1.268
Reuse scrap paper as note paper	664	1	5	3.63	1.143
Use CFL (compact florescent lights) instead of incandescent light bulbs	667	1	5	3.39	1.178
Unplug chargers and appliances when not in use	667	1	5	2.83	1.285
Turn water off while soaping my hands, shaving, or brushing teeth	665	1	5	3.73	1.213
Wash and dry larger loads of laundry	666	1	5	3.99	1.047
Air dry clothes	663	1	5	2.43	1.218
Valid N (listwise)	634				

Support Behaviors

	N	Minimum	Maximum	Mean	Std. Deviation
Buy fairly traded products (coffee, chocolate, rice, etc.)	665	1	5	2.82	1.085
Wash clothes in colder water (warm instead of hot, or cold instead of warm)	667	1	5	3.37	1.331
Buy local products	664	1	5	3.09	.991
Donate re-usable goods to those in need (food drives, Goodwill, cell phone emergency re-use programs)	665	1	5	3.68	1.071
Valid N (listwise)	657				

Transportation Behaviors

	N	Minimum	Maximum	Mean	Std. Deviation
Minimize travel by car	668	1	5	3.08	1.105
Use public transit (bus, trains) instead of cars	665	1	5	2.74	1.164
Walk or bike instead of using car or public transit	664	1	5	3.05	1.142
Valid N (listwise)	660				

Civic Engagement Behaviors

	N	Minimum	Maximum	Mean	Std. Deviation
Participate in the activities of local environmental groups	667	1	5	2.29	1.127
Vote for political figures on the basis of their environmental positions	665	1	5	2.92	1.238
Write a letter to a public official or business leader about environmental concerns	662	1	5	1.65	1.005
Talk to friends, family, or associates about environmental issues	665	1	5	2.98	1.155
Talk to friends, family, or associates about social issues	667	1	5	3.17	1.195
Educate myself about environmental issues	666	1	5	3.30	1.097
Educate myself about social issues	664	1	5	3.44	1.036
Participate in organizations focused on the environment	665	1	5	2.45	1.144
Volunteer	668	1	5	3.25	1.141
Participate in organizations focused on social justice	665	1	5	2.58	1.190
Participate in organizations focused on diversity	666	1	5	2.61	1.182
Valid N (listwise)	643				

Diet Behaviors

	N	Minimum	Maximum	Mean	Std. Deviation
Eat less beef	666	1	5	2.53	1.467
Eat less poultry	666	1	5	2.13	1.269
Eat less fish	669	1	5	2.42	1.407
Eat less dairy	667	1	5	2.12	1.210

Diet Behaviors

	N	Minimum	Maximum	Mean	Std. Deviation
Eat less beef	666	1	5	2.53	1.467
Eat less poultry	666	1	5	2.13	1.269
Eat less fish	669	1	5	2.42	1.407
Eat less dairy	667	1	5	2.12	1.210
Valid N (listwise)	658				

Table 2. Perceived Impact's Significant Effect on Sustainable Behaviors

Behavior Themes (Dependent Variable)	Perceived Impact (Independent Variable)	Sig.	Beta
Support	Perceived Impact of Eating Less Beef	0.024	0.103
Transportation	Perceived Impact of Recycling	0.051	-0.105
Transportation	Perceived Impact of Eating Less Beef	0.033	0.100
Civic Engagement	Perceived Impact of Recycling	0.012	-0.116
Civic Engagement	Perceived Impact of Eating Less Beef	0.000	0.204
Diet	Perceived Impact of Eating Less Beef	0.000	0.485
SPECIFIC SUB-BEHAVIORS:			
Recycle (paper, cardboard, cans, phone books, etc.)	Perceived Impact of Recycling	0.000	0.344
Eating less beef	Perceived Impact of Eating less beef	0.000	0.550

Table 3. Motivation Toward the Environment's Significant Effect on Sustainable Behaviors

Behavior Themes (Dependent Variable)	Motivation (Independent Variable)	Sig.	Beta
Reduce, Reuse, Recycle	Integrated Motivation	0.000	0.253
Support	Integrated Motivation	0.000	0.277
Transportation	Integrated Motivation	0.000	0.227
Transportation	Introjected Motivation	0.033	-0.125
Civic Engagement	Integrated Motivation	0.000	0.376
Civic Engagement	External Regulation	0.015	0.114
Diet	Integrated Motivation	0.000	0.248

Table 4. Self-Worth's Significant Effect on Sustainable Behaviors

Behavior Themes (Dependent Variable)	Self-Worth (Independent Variable)	Sig.	Beta
Civic Engagement	Environmental Self-Worth	0.018	0.137

Table 5. External Regulation's Effect on Civic Engagement

p-value	Sub-Behavior (Dependent Variable)	Sig.	Beta
***	Participate in the activities of local environmental groups	0.000	0.262
***	Vote for political figures on the basis of their environmental positions	0.001	0.130
***	Write a letter to a public official or business leader about environmental concerns	0.000	0.391
*	Talk to friends, family, or associates about environmental issues	0.051	0.077
-	Talk to friends, family, or associates about social issues	0.127	0.060
-	Educate myself about environmental issues	0.571	0.022
-	Educate myself about social issues	0.521	-0.025
***	Participate in organizations focused on the environment	0.000	0.212
-	Volunteer	0.183	0.052
***	Participate in organizations focused on social justice	0.000	0.203
***	Participate in organizations focused on diversity	0.000	0.200

Table 6. Environmental Self-Worth's Effect on Civic Engagement

p-value	Sub-Behavior (Dependent Variable)	Sig.	Beta
***	Participate in the activities of local environmental groups	0.000	0.355
***	Vote for political figures on the basis of their environmental positions	0.000	0.420
***	Write a letter to a public official or business leader about environmental concerns	0.000	0.301
***	Talk to friends, family, or associates about environmental issues	0.000	0.364
***	Talk to friends, family, or associates about social issues	0.000	0.291
***	Educate myself about environmental issues	0.000	0.354
***	Educate myself about social issues	0.000	0.199
***	Participate in organizations focused on the environment	0.000	0.351
***	Volunteer	0.000	0.172
***	Participate in organizations focused on social justice	0.000	0.265
***	Participate in organizations focused on diversity	0.000	0.268

Table 7. Demographics Significant Effect on Significant Behaviors

Behavior Theme (Dependent Variable)	Demographics (Independent Variable)	Sig.	Beta
Reduce, Reuse, Recycle	Gender	0.046	0.081
Reduce, Reuse, Recycle	Class	0.023	0.183
Support	Gender	0.020	0.101
Transportation	Gender	0.006	-0.123
Civic Engagement	College	0.004	-0.104
Diet	Age	0.097	-0.126
Diet	College	0.085	-0.064