

EFFECT OF SOCIAL MEDIA AND PLEDGE COINS ON PRO-ENVIRONMENTAL
BEHAVIOR OF YELLOWSTONE NATIONAL PARK
YOUTH CONSERVATION CORPS ENROLLEES

by

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ABSTRACT

In a world facing many serious environmental concerns, such as climate change, there needs to be a new generation of stewards willing to ensure our natural resources can be enjoyed for generations to come. These next stewards may come from programs like the Youth Conservation Corps (YCC) in Yellowstone National Park. These individuals are from the ages of 15 – 18 and serve for one month inside the park. They work on projects that help conservation and education efforts in Yellowstone National Park while also learning and developing leadership and career skills.

The two sessions of 2016 YCC enrollees ($N = 60$) were chosen to participate in this study focused on the impact of social media and social pressure on pro-environmental behavior. Studies have shown that this age demographic is more likely to be influenced by social media, thus this study was interested in how this influence impacted their behaviors and attitudes toward the environment and creating social change.

Half of the enrollees ($n = 27$) were asked to create a video to post to social media in which they would pledge to help the environment. Then once the pledge was completed, they would post another video to social media challenging another individual to also perform a pro-environmental action and passing on to them a wooden pledge coin. The other half of enrollees were the comparison group and were not asked to post any social media components. Both sessions were given two sets of Likert-scale question and short-answer questionnaires six months apart to evaluate any changes in attitudes or behaviors toward the environment following their experience in the YCC.

The results of this study showed that after six months of social media monitoring, no YCC enrollee posted a pledge video to social media, and only one enrollee reported passing on a pledge coin. The questionnaires confirmed these findings. Enrollees disagreed that social media was an influence, but rather they agreed that families and social networks were an influence on their behavior. They also agreed to having interest in and caring for the environment. Furthermore, the short-answer questions identified the already strong connection these teenagers had to the environment, with many stating that they often participate in many pro-environmental behaviors already, but that the YCC program increased their awareness and likelihood of doing more.

Indeed, these YCC participants are the current and future stewards of our natural world, but this study found that using social media with pledge videos and pledge coins are not likely to be an effective means to encouraging others to do the same. Further research is needed to validate these findings due to the small sample sizes and complications with the questionnaire administration.

INTRODUCTION AND BACKGROUND

Purpose

With pressing environmental issues such as climate change facing our world today, we need ways of engaging this and future generations in making environmentally-friendly, or pro-environmental, actions. These actions need to happen quickly and they also need to be sustained in order to curb climate change's devastating effects.

As Jon Jarvis, the former Director of the National Park Service (NPS) stated, "I believe climate change is fundamentally the greatest threat to the integrity of our national parks that we have ever experienced. The current science confirms the planet is warming and the effects are here and now" (National Park Service, 2010, p.1). These protected areas are essential for the continued existence of many species, and they also contribute to the well-being of society through many physical and psychological benefits.

Over the past ten years I have worked nine seasons in three different national parks, six of which were in Yellowstone National Park (YELL). During these experiences, I have found a great appreciation for teaching others about the environment and our natural resources. I have especially enjoyed teaching children and connecting them to nature. Our world will be taken into their hands, and what we teach them today will influence how they protect it tomorrow.

Research by De Young (1993), suggests that commitment is one way to achieve pro-environmental behavior, and that commitment can result in durable change as well (pp.498-499). For example, in New Zealand, children who become Kiwi Rangers are asked to make a commitment to helping the environment by filling out a pledge card.

These pledge cards ask Kiwi Rangers how they will help the environment and nature when they get back home. By making their own pledges, they commit to performing a pro-environmental action after leaving the national park that is meaningful to their own lives (Figure 1).

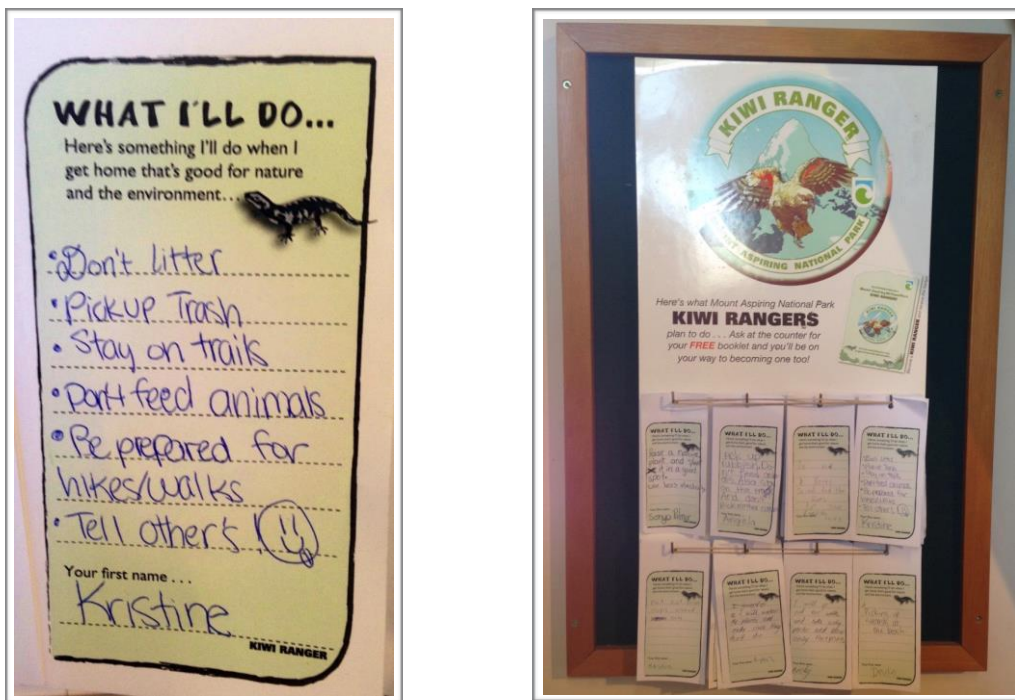


Figure 1. Kiwi Ranger pledge card and Kiwi Ranger pledge board at Mount Aspiring National Park, Wanaka, New Zealand, January 2016.

These Kiwi Ranger pledge cards, after being filled out, are then hung on the Visitor Center wall for all others to see (Figure 1). Allowing other visitors to see their pledges may add a level of social pressure, which may further encourage the pledges to be completed. As Schultz (2014) reports, social modeling is the third most successful tool to use when trying to effect pro-environmental behavior (p.108). Visible pledge cards may also encourage others to participate in pro-environmental behavior because they see

others taking part in these actions. With the combined influence of commitment and social pressure, pledge cards should be effective at encouraging positive behavior toward the environment.

Overview

My Action Research project goal was to show how the U.S. and its national park system could implement a similar pledge card program. As a seasonal park ranger in YELL, my project was focused on the next generation of stewards, specifically teenagers (ages 15-18) who had joined us in the park for one month as enrollees of the Yellowstone Youth Conservation Corps (YCC).

The YCC program, according to DelRoss and Coonan (2014), has been operating annually in YELL since 1989. They describe it as, “An education, leadership, work and outdoor recreation program... that encourages youth to work, play, learn and grow in one of the world’s greatest natural landscapes” (p. 2). Throughout the program, enrollees are taught a curriculum, “Aimed at teaching youth about the Yellowstone ecosystem, Yellowstone history, leadership development, careers in the NPS, and empowering them to make sustainable choices” (p. 2). Ideally, once these enrollees finished their season, they would go on to make the world a better place by practicing their newly acquired skills in conservation, service and leadership.

Although the YCC program does not incorporate much social media into their activities and enrollees are only allowed to use their personal electronic devices on the weekends, social media is usually a large part of this generation’s daily lives. According

to a recent Pew Research Center study, “92% of teens report going online daily” and 52% of those surveyed use Instagram (Lenhart, 2015). These assumed frequent interactions with social media were the basis of my research.

During the project, a selection of the YCC enrollees were asked to use social media to record and share a short video stating what they pledged to do to help the environment after they returned home. These YCC enrollees also received two pledge coins to take with them (Figure 2).



Figure 2. Pledge coins given to all treatment YCC enrollees, ($n = 27$).

The pledge coins served two functions. First, they acted as a durable reminder for the participants to complete their pledges. Second, they were an object that could be passed along from one person to another, creating a chain effect of pro-environmental behavior. Once the pledged action was completed, the participant would then be asked to share another message through social media about what they did and who they

challenged to perform the next pledge by passing on the coins. This social pressure might act as encouragement to complete a pro-environmental action, ideally inducing similar widespread use found in other social media challenges such as the ALS Ice Bucket Challenge (Lee, 2014). This pledge system could eventually grow to be used nationally with other YCC participants, or other park visitors, and could serve as those commitment and social components needed to make long-term behavior change here in the U.S.

Research Questions

Through these pledge and social media postings, my Action Research (AR) project studied the broad question, “Do pledges posted on social media encourage pro-environmental behavior from YCC enrollees after leaving the park?” Furthermore, a secondary question asked, “Do pledge coins encourage a chain effect of pro-environmental behavior?”

Research Implications

The goal for this Action Research project was to see what effect social media and pledge coins would have on environmental stewardship and sustained caring of YCC enrollees. If there was a positive effect, the hope was that these treatments would then steer YCC youth and others around the country in the direction of sustained caring and environmental stewardship.

Additionally, it was believed these pledges and this project would help teach myself, as well as future colleagues and researchers, how to encourage pro-environmental behavior in other park visitors. As we learn more about how the YCC program influences

enrollees and if these pledges are beneficial, it allows for expansion of the idea and implementation in other NPS units and programs. It will also deepen the field of research in environmental behavior, and could help other conservation areas around the world involve their youth in committing to pro-environmental action.

Demographics

The YCC enrollees were selected for this project for two main reasons. First, I was interested in knowing more about the future stewardship of our natural lands, and the YCC enrollees are of the next generation to be making decisions about our natural resources. Second, the YCC enrollees were a group that the YELL Youth Programs Manager had wanted to research for many years and this project provided that opportunity.

After selecting the YCC enrollees as my target research group, I decided to use both 2016 sessions in order to collect as much data as possible. Therefore, the sample size of my study was 60. This included the number of YCC enrollees in each of the two sessions as well as the youth leaders that were present for both sessions. These 60 participants were between the ages of 15 and 18, male or female, and came from a variety of backgrounds and ethnicities (Figure 3).

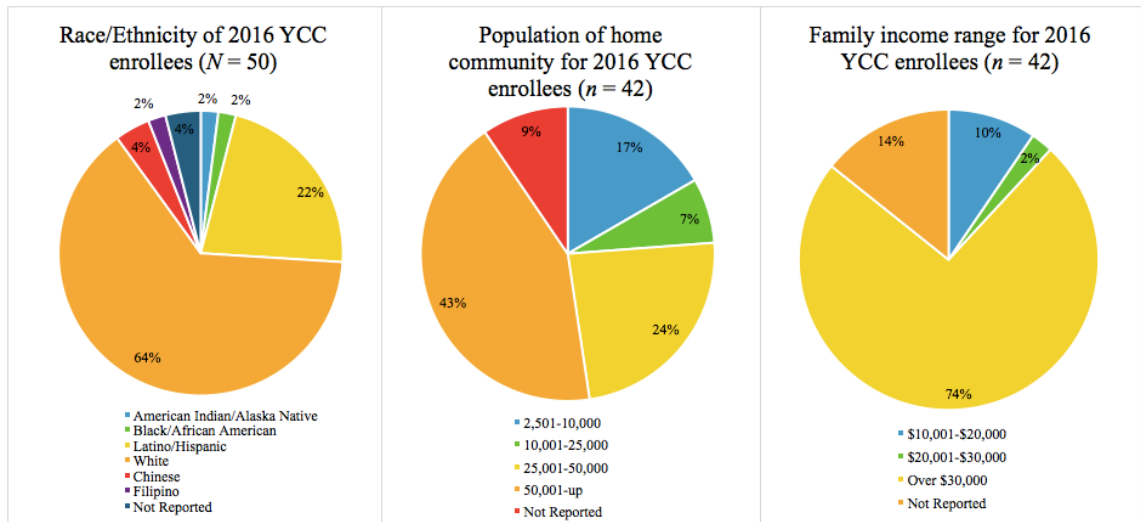


Figure 3. Demographic information for the 2016 YCC enrollees, (N = 50; n = 42).

In terms of Race/Ethnicity, out of the 50 enrollees surveyed by the YCC Director, the majority of YCC enrollees for 2016 identified as white (64%), and 22% identified as Latino/Hispanic. Only three staff reported their Race/Ethnicity, with two identifying as American Indian/Alaska Native and one as Latino/Hispanic. When asked about their home community population, 42 responded, with the largest percentage (43%) coming from areas with greater than 50,000 inhabitants. Lastly, 74% of the 42 enrollees who responded came from households where the family income was above \$30,000. To protect anonymity, this demographic information was used as background knowledge for the study and was not linked to specific individuals.

Support Committee

My support committee consisted of my MSSE advisor, the YELL Education Department managers, my science advisor and my proofreader. I also sought guidance from two former YELL supervisors, and I gained feedback and instruction on the

research process in YELL from Sarah Haas, and the NPS research process from Bret Meldrum.

My support committee:

1. Dr. Walt Woolbaugh – MSSE Core Education professor and my MSSE advisor and mentor.
2. Bob Fuhrmann - YELL Youth Program Manager and my primary support for my AR research implementation. Bob also acted as my communication liaison with the YCC enrollees.
3. Beth Taylor – YELL Education Program Manager and acting North-District Interpretive Ranger who helped me develop this research project. She also supported me in our wooden coin design and in the presentation of the project to the YCC enrollees.
4. Amber Kirkpatrick – MSSE instructor and my science advisor.
5. Sabrina Trevathan – Registered Diplomate Reporter and my proofreader and editor.

CONCEPTUAL FRAMEWORK

In January 2016, I traveled to New Zealand for the first time. My passion for the environment and background with the NPS led me to focus that journey on visiting natural areas, especially national parks. Having been heavily involved with the youth in YELL through the Junior Ranger program, I was also curious to learn about their youth programs. While in these national parks, I met fellow national park rangers and discussed with them ways that they involved younger generations in park conservation in their

country. They told me about their Kiwi Ranger program and the different versions they had created.

In 2010, using the U.S. Junior Ranger program as a model and sponsorship from the University of Otago, “The Kiwi Ranger program was created by Otago University design senior lecturer and environmental designer Dr. Mick Abbott and his wife Carli Richter” (Department of Conservation, 2010). Abbott and Richter approached a ranger at the Department of Conservation and together they designed the Kiwi Ranger program, “To help young people and families connect with key conservation places” (Espiner, S., Stewart, E., Dalsiel, P., & Saunders, C., 2013, p. 15).

The Kiwi Ranger program was implemented in a few national parks as a pilot and by 2013 had expanded to 16 different sites across the North and South Islands (Espiner et al., 2013, p. 16). Although the Kiwi Ranger program started just seven years ago, Espiner et al. (2013) explained that the program, “Has established itself as a promising vehicle with multiple outcomes beneficial to conservation and the economy” (p.17). One such benefit was the commitments they were getting from Kiwi Rangers towards pro-environmental actions. Espiner et al. (2013) explained that a previous study of Kiwi Ranger participants found that, “Forty percent of Kiwi Ranger participants ($n = 40$) had recorded a conservation ‘pledge’ and of these, most (72%) claimed that the ‘pledge’ had been completed 3 weeks after the visit to the conservation site” (p. 19). The high completion rate of the Kiwi Ranger pledges served as inspiration for what a similar program in the U.S. could do.

One must then ask, what was it about the Kiwi Ranger pledge system that made it successful? According to a meta-analysis of strategies that promote pro-environmental behavior, these pledges may have been effective because they included three such strategies: commitment, social pressure and prompts (Schultz, P., 2014, p. 107). After completing the Kiwi Ranger booklet, the Kiwi Rangers were prompted by the Park Ranger to create a pledge card. When they made this pledge card, they in turn made a commitment to the environment, and when they shared it on the visitor center wall they created social pressure to complete the action(s). Therefore, these same strategies were used in creating my AR project. I wanted the YCC enrollees to make a commitment through their pledges. They would then share these pledges through social media and therefore be exposed to social pressure. Finally, they were given a pledge coin to help remind them and prompt them to complete the pro-environmental action they had pledged to do.

Although the prompt may be given to them from another person, having the pledge and commitment created individually by each Kiwi Ranger or YCC enrollee ensured they chose a pro-environmental behavior that was relevant to themselves. These personal behaviors and actions they pledged to do could therefore be defined as environmental action. As Schusler & Krany (2010) explained,

Environmental action aims not to modify specific behaviors like recycling or saving water, but rather engages youth in planning and taking action on environmental issues they find relevant. In addition to improving natural and built environments, these experiences can help youth grow as citizens because they involve authentic participation in community issues (p.208).

One of the goals of the YCC program is to create more engaged and sustainably-minded citizens and environmental action may be helpful in achieving that goal. The addition of pledges to the YCC program may allow for deeper connections to environmental stewardship in these individuals.

This transition to using pledges in the YCC program could support the idea by Schusler et al. (2009), that environmental education is transitioning from a “moralistic to democratic paradigm,” where we are no longer trying as much to, “Modify learners’ lifestyle behaviors... but rather involving more participatory and action-oriented pedagogical approaches, aiming to enable students to reflect upon and address as they choose the social determinants of environmental problems” (p.111). Allowing the YCC enrollees to pledge to do what they saw as a best fit for their community and environment would bring the action into their hands, providing them with more ownership of their project.

Additionally, this ownership could be a way of strengthening one’s sense of place. Kudryavtsev, A., Krasny, M., and Stedman, R., (2012) describe a sense of place as, “A combination of place attachment and place meaning. Place attachment is the bond between people and places, and place meaning refers to the symbolic meaning that people ascribe to places” (p.2). They argue that sense of place, “Fosters an individual’s willingness to engage in environmental stewardship and can contribute to pro-environmental behaviors or behavioral intentions” (p.1). However, the authors caution that, “Other research suggests that place attachment develops over a longer period of time, and therefore is not as likely to change with a short-duration program” (p.10). I

developed questionnaires to ask the YCC enrollees about sense of place and their attachment to the outdoors and YELL, and although the YCC program might be considered short-duration, ecological place meaning would still be a good indicator that the YCC enrollees may be more likely to participate in environmental action.

Connection with a natural area such as YELL was the hope for the YCC program and the background that we hoped would influence their behavior towards the environment. In addition to helping the environment, this participation in environmental action may have other positive benefits as well, such as personal well-being. It has been reported that when young adults participate in pro-environmental actions, “Youths’ reflections on participating in environmental action illustrates that this approach to EE [Environmental Education] contributes to environmental learning *and* to a wide range of other physical, intellectual and emotional and social benefits” (Schusler & Krany, 2010, p. 221). Many of their participants learned about environmental issues in the project, but they also reported feeling more confident, being happier, healthier, and learning new skills such as time management and having patience (Schusler & Krany, 2010, p. 221).

When students participate in what Lieberman (2013) describes as environment-based education, like the YCC program, they improve their, “Academic achievement, classroom engagement and learning, and preparation for college and careers” (p.45) It was also reported that students could improve in other areas of their life, “Student learning about real-world issues, participation in solutions, and developing a sense of environmental stewardship” (p.45). Given the nature of the YCC program, it is not

surprising that the YCC enrollees in the past have also reported similar impacts on their lives after leaving the program (DelRoss & Coonan, 2014, p. 9).

Finally, to complete our understanding of what leads to pro-environmental action, one must also consider demographics. As Larson, L., Castleberry, S., and Green, G., (2010), explained, there are certain aspects of environmental education and environmental orientations that affect children of different gender, age or ethnic groups. After studying the differences in environmental affinity, knowledge and awareness between groups that attended a week-long environmental education camp, they found a few surprising things. Age contributed to differences in eco-affinity, gender was not a factor in any of the study areas, and African American students displayed lower initial eco-awareness and environmental knowledge scores. But, regardless of age, gender or ethnicity, the environmental education program increased scores in all areas (pp. 108-110).

With the influence of demographics, as well as concepts of commitment, social pressure, prompts, sense of place, and environmental action in mind, I developed an AR project aimed at answering my research questions. Using questionnaire design and data analysis concepts such as pre- and post-treatment questionnaires, and Likert-scale questions from Kudryavtsev et al. (2012) and Ferreira, S. (2012), I made three questionnaires (Appendix A, B, C) to help me determine YCC enrollee behaviors and feelings toward the environment, their social networks and social media. I also used a journal to record social media observations for additional data analysis.

METHODOLOGY

Overview

In order to answer my research questions, “Do pledges posted on social media encourage pro-environmental behavior from YCC enrollees after leaving the park?” and, “Do pledge coins encourage a chain effect of pro-environmental behavior?”, I collected data via questionnaires (Appendix A, B, C), videos and journaling (Table 1).

Table 1
Data Collection Instruments

Question	Instrument	Instrument	Instrument	Instrument
How do pledges posted on social media encourage pro-environmental behavior in YCC enrollees after leaving the park?	Pre/Post Questionnaires	Pledge videos	Videos of passing pledge coins	Journal
Do pledge coins encourage a chain effect of pro-environmental behavior	Pre/Post Questionnaires	Pledge videos	Videos of passing pledge coins	Journal

Pre-treatment

Before the study commenced, each YCC enrollee had been living, working and recreating in YELL for three weeks before I met them. During those previous weeks, the YCC enrollees worked under the YCC Co-Directors on conservation projects throughout the park, such as building fences and maintaining trails. They learned these conservation management techniques while also learning valuable leadership and communication skills through living and working together in remote areas. Throughout the process, they were following a resource education curriculum focused on the YELL ecosystem and

YELL history, and included sessions with guest speakers like park scientists and managers to learn more about various aspects of YELL and the NPS. On days off, they recreated in and around YELL hiking, rafting, fishing, backpacking, and swimming. The hope was that by the end of the month, the YCC enrollees would walk away with a greater skill set and feeling of empowerment to be the future stewards of our public lands (Arnold & Coonan, 2016, p. 2).

Treatment

There were two sessions of the 2016 YCC program. Individual applicants were assigned to a session by the YELL Education Program Manager. For the purposes of this study, the first session acted as a comparison group (Comparison Group), and the second session was the treatment group (Pledge Group). Both groups were given questionnaires, but the treatment group was also asked to participate by creating social media pledge videos and by using pledge coins to encourage pro-environmental behavior.

Pledge Videos

YCC enrollees in the Pledge Group were asked to complete a pledge video. This pledge video was a short, 10- to 15-second video, in which they pledged to complete a pro-environmental action once they returned home. These videos were then to be posted to Instagram under #YELLinspired and linked to my account @YELLinspired. The Pledge Group was given six months to complete this task, starting from the end of our initial meeting until the time when the second questionnaire was sent to them. If the pro-environmental action was completed, they were asked to create a second video to post to

Instagram in which they challenged another person to create their own pledge video and complete a pro-environmental action.

Pledge Coins

Pledge Group participants were given two pledge coins to take with them after leaving YELL. At their end-of-season banquet, the pledge coins were given out. These pledge coins were to be used once the Pledge Group participant had completed their pledged pro-environmental action that they made a pledge video about. Once they completed this action, they would encourage a chain effect of pro-environmental behavior by challenging another person to also perform a pro-environmental action and create a pledge video. The coin was to be passed on to this other person to act as a tangible reminder of their pledged action.

The pledge videos and pledge coin treatments were introduced to the YCC enrollees during our initial interaction.

Instrumentation

First Interaction

In order to evaluate if the YCC program could be used as a means of creating future environmental stewards through the use of environmental action pledges. I needed to first assess whether or not the YCC program did indeed cause this greater awareness and appreciation for the environment. Knowing that the impact of the YCC program itself might not be evident until the enrollees had participated in the program for some time, my initial contact with the YCC enrollees was made near the end of their session, but

before they left YELL. Likewise, because some of these changes may have taken time to evolve, I followed up with the YCC enrollees six months after they left YELL.

I first met with each group on the Tuesday during the final week of their month-long session (Session 1: July 12, 2016; Session 2: August 16, 2016). During that initial contact, I spent less than 30 minutes interacting with them. I met with the group in the morning at their meeting hall near Mammoth Hot Springs. After a brief introduction about myself, I explained my goal for being there. I told them that I believed I could be more effective at my job by using techniques learned through my graduate coursework, but also by knowing my audience better. Therefore, my request of them was to help me understand the motivations of their generation more so that I could know my audience on a deeper level. As our future stewards, I explained, their generation is an important piece of the puzzle for making sure our natural places, like YELL, stay the same.

This introduction was given to both sessions of YCC enrollees in the same manner, in person at the meeting hall. Then, a questionnaire was given out to all enrollees. I explained my goal for that morning was to collect their opinions through a 20-question questionnaire (Appendix A). I emphasized that their participation was voluntary and would in no way impact their schooling or career. I also explained my system for keeping the questionnaire anonymous. At the top of the questionnaire they were asked to write down their initials. Those initials would be used to identify them in six months when they completed the secondary questionnaire. At that point, however, once I received the second questionnaire, I would assign that set of initials a number and remove the initials from the questionnaires - shredding the initials and deleting that

column in my encrypted data sheet. From that point forward, the responses could not be traced back to a particular enrollee. Likewise, because I had never met the enrollees before that initial meeting, I never received their names, and only the YCC leaders would have access to their emails.

Once it was clear that their participation was voluntary and that it would be anonymous, I handed out the questionnaires. For those that did not want to participate, I asked if they would just put back their blank questionnaire into the yellow manila envelope labeled, “2016 YCC Pledge/Comparison #1 Questionnaires, Date,” with the others. After about 10 minutes everyone had turned in their questionnaires. I thanked them for their time and their service in YELL and reminded them to check their email in six months for the follow-up questionnaire.

This was the end of the initial meeting I had with Comparison Group. I left the meeting hall and did not see those enrollees again. My next interaction with them would be in six months to email them the second questionnaire.

For the Pledge Group, instead of leaving after collecting the questionnaires I continued on with introducing the next step of my AR project. I explained to the Pledge Group the pledge video and pledge coin concepts, starting with the pledge video. I explained that one of our hopes for them after leaving the YCC program was that they would be empowered to make more sustainable choices and that they would be able to act in more environmentally-friendly ways. It was also hoped that they would bring these ideas home and share them with their friends and family. I explained that these attitudes towards the environment were going to be the focus of the next part of my research.

I explained that I wanted them to think of something they could pledge to do once they returned home and share that idea on social media using Instagram under #YELLinspired. They would create a short, 10- to 15-second, video explaining what they pledged to do. For consistency, all Pledge Group participants were asked to start their videos by using the statement, “I am YELL Inspired and I pledge to help the environment when I return home by...” They would then post the video to Instagram. During this time, I showed them my own 15-second pledge video (I pledged to reduce my landfill stream while I remained in YELL by recycling and composting). I emphasized that the action they choose to do needed to be meaningful to them, something that could easily be measured and something that would have an end date so they would know when it had been accomplished. Suggestions such as turning off the lights, or collecting trash around their school for a certain amount of time were offered as further options. Once they completed their pledged pro-environmental action, they would then post a second video to Instagram under the same hashtag in which they would challenge another person to complete a pro-environmental action and pledge video.

I explained that in order to encourage this next action, the Pledge Group participant would pass on a wooden coin, a pledge coin, to this other person to help remind and encourage them in completing their pledged action. An example of the pledge coin was shown to the Pledge Group during this time. Participants received their two coins later that evening at the end-of-season banquet. These two coins were to be shared with their friends and family when challenging others to complete a pro-environmental action, ultimately hoping to cause a chain effect of environmentally-friendly actions.

There was not enough time to allow the Pledge Group to complete their videos during that meeting, so they were left to complete them on their own time. Before leaving, I wrote down the hashtag (#YELLinspired) we would be using, I asked them to link their post to my account name (@YELLinspired) to ensure I could follow their posts, and I also included the aforementioned statement I wanted them to say when making their pledge video. I thanked them for their time and service in YELL and reminded them to look for another email from me in six months. I wished them well and hoped that with their help we would spread our ideas like wildfire, passing on pro-environmental behavior across the US as we went.

Second Interaction

Six months after the first questionnaires were given out to the Comparison Group, on Thursday, January 12, 2017, I drafted an email to the former YCC enrollees reminding them of myself, my study and explaining the goal of the second questionnaire. At the end of the email, there was a link to access questionnaire 2 through Google Forms, and a request for them to complete it. Because I did not have email access to the enrollees, I sent the email to the Education Program Manager who then sent it out to the enrollees on my behalf. The Education Program Manager was out of the office on January 12th, so the email was sent out on January 13th. Enrollees were given until the end of the month, January 31st, to complete the questionnaire.

One month later, and six months after the Pledge Group's first questionnaires were fill out, on Thursday, February 16, 2017, I drafted another email to send out to this group of enrollees. It too reminded them of the study and also had a link to access their

second questionnaire. I again, forwarded the email to the Education Program Manager for him to send out.

This time, however, before sending the email out, the Education Program Manager realized that he had made a mistake with the previous month's email. Instead of sending the email out to only the Comparison Group, he accidentally sent the email out to all 2016 YCC enrollees, both the Comparison Group as well as the Pledge Group.

Quickly, I drafted a new email to send out to both groups. The Comparison Group's email explained the situation and asked that if they had already filled out the questionnaire that they did not need to do anything, but if they had not filled it out, they could go ahead and do so now. I reopened the Comparison Group questionnaire 2 on Google Forms and allowed the enrollees until the end of the month, February 28th, to complete the questionnaire.

For the Pledge Group, I amended the initial email for questionnaire 2 that I had sent earlier to the Education Program Manager. In this email, I explained the mix-up and asked that if the enrollee had already filled out a questionnaire, that they instead needed to fill out this corrected version. They had until the end of the month, February 28th to complete this version of the questionnaire.

YCC crew leaders had participated in both sessions that summer, and were given the initial questionnaires and Pledge Coins, therefore, they were asked to complete the Pledge Group questionnaire 2.

I sent both explanatory emails out to the Education Program Manager and he sent them to respective groups.

When the end of the month was upon us, I closed both questionnaires and exported the data from Google Forms into Microsoft Excel spreadsheets.

Questionnaires

Enrollees were asked to fill out these two questionnaires over a six-month time frame. The questionnaires were used to evaluate if any changes in attitude or behavior arose due to the influence of the YCC program. These questionnaires, including both Likert-scale questions and short-answer questions, had the enrollees explain their feelings towards the environment, their social networks and social media. The first 17 questions were Likert-scale and were divided into three sections: environmental questions, social questions and social media questions. The environmental questions asked the enrollees about their sense of place, and feelings and attitudes toward the environment. The social questions asked about the influence of friends and family on their behavior. And the social media questions asked about the influence of social media on their behavior. The short-answer questions varied depending on which session the YCC enrollees were a part of. Both sessions were asked for more detailed answers about their environmentally-friendly behavior and the influence of the YCC program, while the Pledge Group was also asked how the treatment influenced them.

Journaling

I set up an Instagram account (@YELLinspired) under the same hashtag (#YELLinspired) that we would be using for the pledge videos so it was easier to track the YCC enrollees' posts. I posted my initial pledge video to Instagram a few days after announcing the video concept to the Pledge Group. I then repeatedly checked back to the

account and hashtag to see if any other posts had been made. To keep track of these videos, I set up an electronic journal to record the data (Appendix D). Once a month, I checked the account and recorded notes in the journal. I continued this journaling process through the end of February in order to fully encompass the six-month study time frame. Planned and actual timelines are listed in Appendix E.

In conclusion, the research methodology used during this AR project received an exemption by Montana State University's Institutional Review Board (IRB) and compliance for working with human subjects was maintained (Appendix F).

DATA AND ANALYSIS

Overview

To answer the research questions, “Do pledges posted on social media encourage pro-environmental behavior from YCC enrollees after leaving the park?” and, “Do pledge coins encourage a chain effect of pro-environmental behavior?” data from the questionnaires and social media observation journal were analyzed.

To begin, the paper format questionnaire 1s from the Comparison Group and Pledge Group were analyzed. Each group's responses were entered and organized into an Excel spreadsheet. Individual responses and overall trends were analyzed and compared between the two groups.

On January 13, 2017, six months after the Comparison Group completed questionnaire 1, questionnaire 2 was created via Google Forms and sent to all the members of the Comparison Group via email.

On the second questionnaire, all but one question was the same as the first questionnaire. The altered question was one of the short-answer questions, asking the participants about the influence of the YCC program on their thoughts and behaviors. To evaluate any change in response over the six-month time frame, the question needed to be asked in a different way. The question changed from, “How do you think the YCC program will effect your outlook or behavior towards the environment when you return home?” to “How has the YCC program impacted your behavior towards the environment? Please list several examples for me.”

Unfortunately, as mentioned earlier, a complication with this questionnaire arose when the Education Program Manager accidentally sent this questionnaire out to both the Comparison Group and the Pledge Group on January 13th (which was not realized until February 16th). The impact of the single error greatly impacted the remainder of my study and my data validity and analysis.

Despite this being the correct questionnaire 2 for the Comparison Group, at least 8 others from the Pledge Group also responded. This became a problem when I noticed some of the Pledge Group participants had the same initials as the Comparison Group participants; therefore, it was now impossible to distinguish like-initialed participants between each group. This meant that I could no longer reliably find all the pairs between the two questionnaires and could not perform the planned comparative analysis between individual responses six months apart. There were ten individuals in the Comparison Group that completed both questionnaire 1 and questionnaire 2 that I could positively

identify, but the small sample size did not allow for detailed statistical analyses on these pairs.

Likewise, my analysis for the Comparison Group questionnaire 2 was more focused on general trends and reliant on the qualitative responses for each answer.

On February 16, 2017, just as questionnaire 2 for the Comparison Group had been delivered electronically to the YCC enrollees, so too was questionnaire 2 for the Pledge Group, formatted again in the same way as all the other questionnaires with the first 17 questions being Likert-scale, and last ones being short-answer. The difference this time was the short-answer questions. Rather than just three short-answer questions, there were six in addition to those original three for a total of nine short-answer questions. These additional questions asked the participants specifically about the Pledge Videos and Pledge Coins.

Once six months had passed since the first questionnaires were given out, questionnaire 2 was emailed to the Pledge Group. However, this was when the Education Program Manager realized their mistake in that they had already sent out a second questionnaire to the Pledge Group.

In the end, only six individuals completed the Pledge Group questionnaire 2 and at least one participant was from the Comparison Group who mistakenly took this version, and vice versa, some Pledge Group participants took the Comparison Group questionnaire 2. Due to these complications, the data collected for both the Comparison Group questionnaire 2 and the Pledge Group questionnaire 2 were analyzed only for general trends and focused on qualitative responses instead.

In addition to the questionnaires, social media videos and pledge coins were analyzed. Once the Pledge Group completed their first questionnaires during that initial meeting, I shared with them the concept of the pledge video. I showed them my own video and asked them to create their own before they left YELL for the summer and to post their videos to Instagram. I also asked for them to pass along a pledge coin after completing their pledge to encourage others to do the same. This pledge coin transfer was also supposed to be made into a video and posted on social media. After I left that meeting, I posted my own video on the Instagram account. For the subsequent six months from that date, I reviewed the Instagram account to see what other videos had been posted and recorded observations in the journal (Appendix D). Surprisingly, after six months, I was the only one to post a pledge video to Instagram under #YELLinspired. In order to find out why, the Pledge Group was sent questionnaire 2 which included many questions asking about the pledge videos and the pledge coins.

Questionnaire 1

Comparison Group

For the Comparison Group questionnaire 1, 32 questionnaires were collected ($n = 32$). Four questions were responded to by only 31 participants (Figure 4).

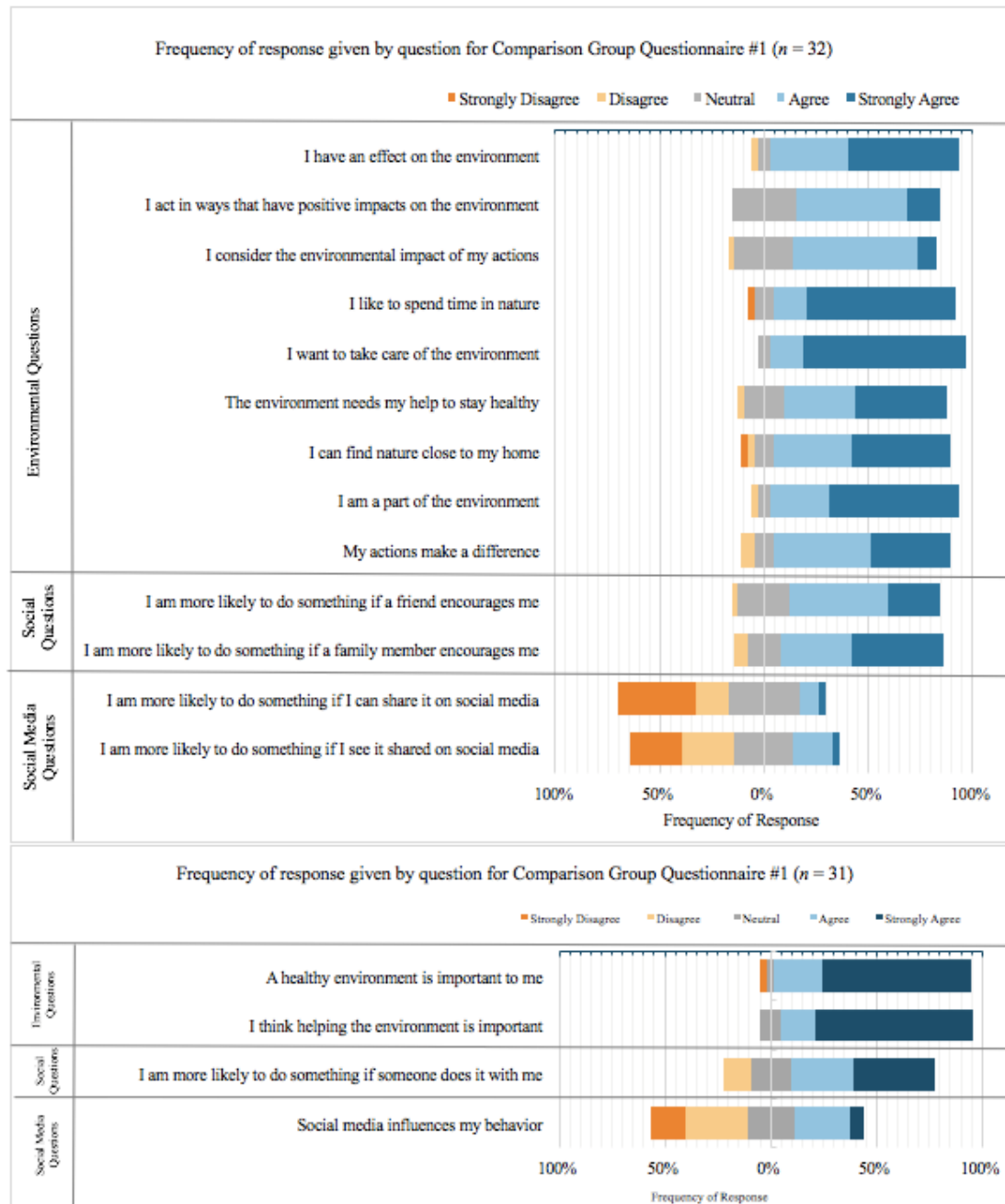


Figure 4. Comparison Group Questionnaire 1 frequency of response, ($n = 32$; $n = 31$).

With the exception of the social media questions, the overall trend for the Comparison Group questionnaire 1 Likert-scale questions were towards the agree and strongly agree values.

Within the three groupings of questions, environmental, social and social media, five responses stood out from the rest. Two questions from the environmental question section, “I act in ways that have a positive influence on the environment” and “I consider the environmental impact of my actions” had a mixed distribution of responses (Figure 5).

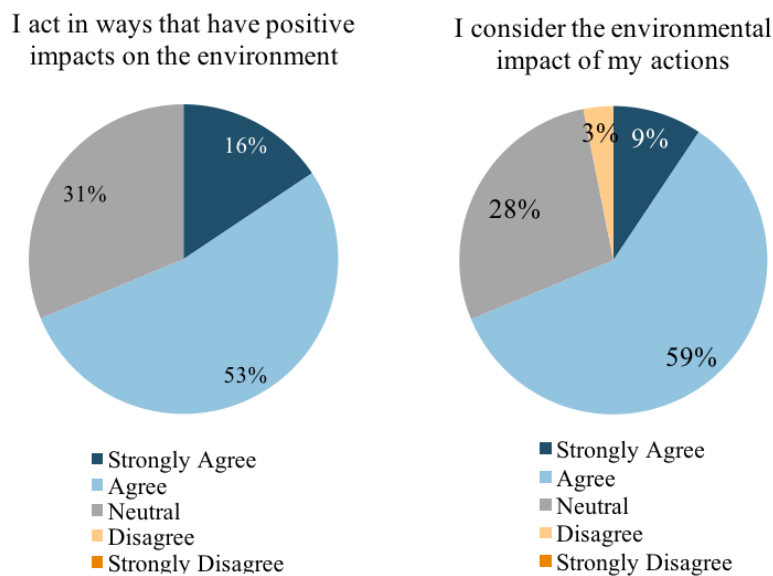


Figure 5. Responses to two environmental questions on Comparison Group questionnaire 1, ($n = 32$).

These two questions stood out from the other environmental questions because they had a larger proportion of agree and neutral responses, and fewer strongly agree responses than the rest in that question category. Over half of the respondents (69%) agreed or strongly agreed that they act in ways that positively impact the environment. One respondent explained, “I recycle and attempt to learn where my foods and products come from and how they are made.” Another agreed but felt as though they could do more. This feeling of being able to do more was echoed in other questions and responses.

When asked about the awareness of their actions and environmental impact of them, many (68%) agreed or strongly agreed and responded that they do, but as one respondent admitted, that they could improve, “I try to be thoughtful, but laziness sometimes keeps me from fully considering.”

The three social media questions, “Social media influences my behavior,” “I am more likely to do something if I can share it on social media” and “I am more likely to do something if I see it shared on social media” were noticeable as well. Responses to these questions were also mixed, but unlike the other questions, these had the most disagree or strongly disagree values given (Figure 6).

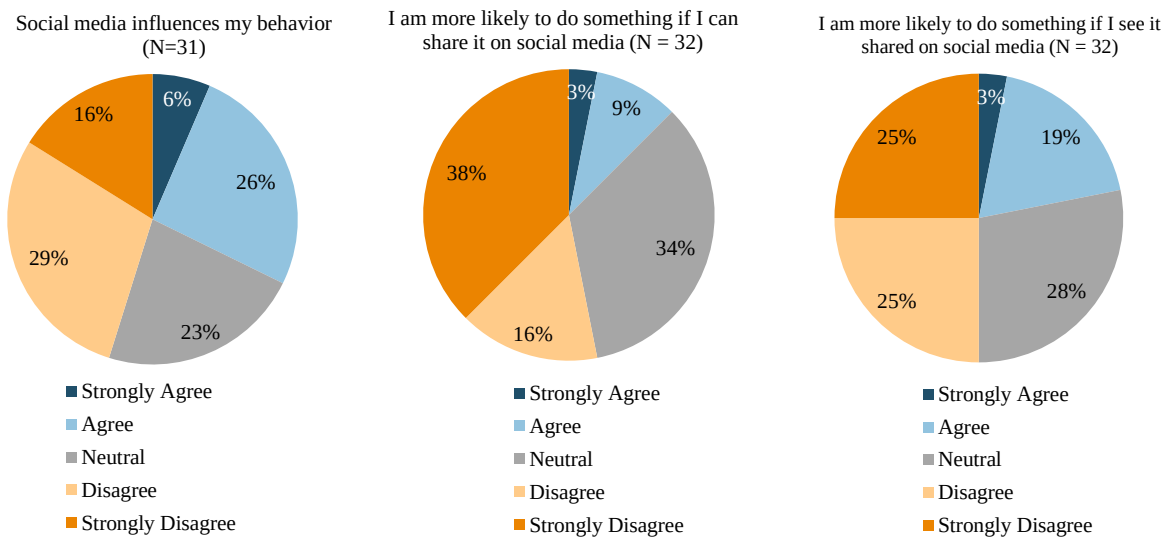


Figure 6. Comparison Group questionnaire 1 social media question responses, (n = 31; n = 32).

Many of those responding with a disagree or strongly disagree value to the social media questions indicated that social media was not important to them nor was it

influential, stating, “I don’t really care,” and “I don't care what others think about me and my actions.”

Out of these three questions about social media, one received the most strongly disagree responses, “I am more likely to do something if I can share it on social media.” In fact, this question received the highest percentage of strongly disagree responses out of the entire questionnaire (38% out of 32 respondents). A student explained their response with the succinct answer, “That’s just stupid,” while another stated, “That's a terrible reason to do anything.” On the other hand, there was another third (34%) of the responses that stated they were neutral to the question, and some agreed or strongly agreed with the statement. Although surprising and counter to the PEW research, these data might indicate a true lack of interest in social media from the YCC enrollees, but it might also indicate that the individual does not realize or want to admit how much social media truly influences them.

The question that garnered the greatest number of strongly agree responses was “I want to take care of the environment.” Many students mentioned future generations or because this is our only Earth as reasons for caring. For example, one participant explained, “It’s important for everyone to collectively care for the earth in order to have a sustainable future.” Ultimately, 78% of 32 respondents strongly agreed with the statement, and an additional 16% of the 32 respondents agreed (Figure 7).

I want to take care of the environment
($n = 32$)

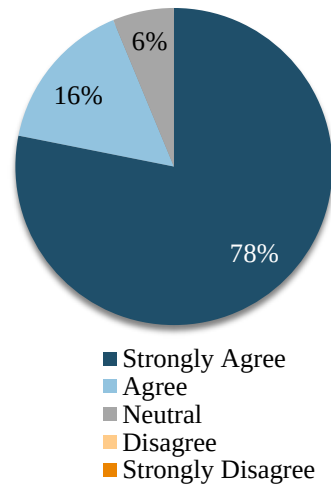


Figure 7. Frequency of responses for the question, “I want to take care of the environment” from the Comparison Group questionnaire 1, ($n = 32$).

The passionate responses given to this environmental question seemed reasonable when considering that these individuals chose to actively take care of the environment through the YCC program curriculum. It is also possible that these individuals may have come from backgrounds where they often interacted with nature. One of the environmental questions, “I like to spend time in nature” indicated that 72% of respondents strongly agreed to the statement and there were many explanations about how much they loved nature and felt at home or alive in it. That sense of place is a powerful motivator in wanting to protect those areas that one finds valuable.

Respondents further supported this idea in responses to the final three short-answer questions of the Comparison Group questionnaire 1. Two questions focused on their own participation in environmentally friendly behavior, “How often do you participate in environmentally friendly behavior?” and “List activities you do that support

the environment.” The third question specifically asked how they thought the YCC program would influence them, “How do you think the YCC program will effect your outlook or behavior towards the environment when you return home?” Many of the responses to these questions had the same four words or key phrases (Table 2).

Table 2
Comparison Group questionnaire 1 short-answer responses.

Word or Term	Frequency mentioned
Recycle/Recycling	18
Riding a bike	8
Compost/Composting	7
Water and Energy Conservation	13

Out of the four main pro-environmental activities mentioned, recycle/recycling was stated most frequently, and conservation of water and energy through shorter showers or turning off the lights was a close second. Perhaps not coincidentally, recycling, composting and water and energy conservation were lifestyle choices highlighted by the YCC program and practiced while the YCC enrollees are in YELL. Indeed, those encouraged practices were sometimes mentioned in the final questionnaire question about the influence of YCC on their outlook and behavior towards the environment. Overall the trend showed many responses indicating that the YCC program had had a positive effect on their behavior toward the environment. Many indicated that it brought about more awareness, as this respondent described, “I think I will become more aware of the things I am doing that could be harmful to the environment.”

Through all the questionnaires, there was one exception to the group, but I believe it was because a respondent did not take the questionnaire seriously, indicated by their answer to one of the short-answer questions, “1-10 = 3.” Altogether though, the short-answer responses and the Likert-scale questions combined to indicate that this group of individuals cared greatly about the environment and were influenced by their friends and family, but not interested or influenced by social media.

Pledge Group

Twenty-seven Pledge Group individuals responded to the questionnaire; however, one respondent answered the question, “My actions make a difference” by selecting both that they agreed and were neutral, and explained that, “Everyones [sic] do.” Because that answer was not definitive, that question had a different sample size and was, therefore, removed from the analysis below.

Analysis for questionnaire 1 involved calculating the frequency of each value response given and placing those findings in a divergent stacked bar chart for each question (Figure 8).

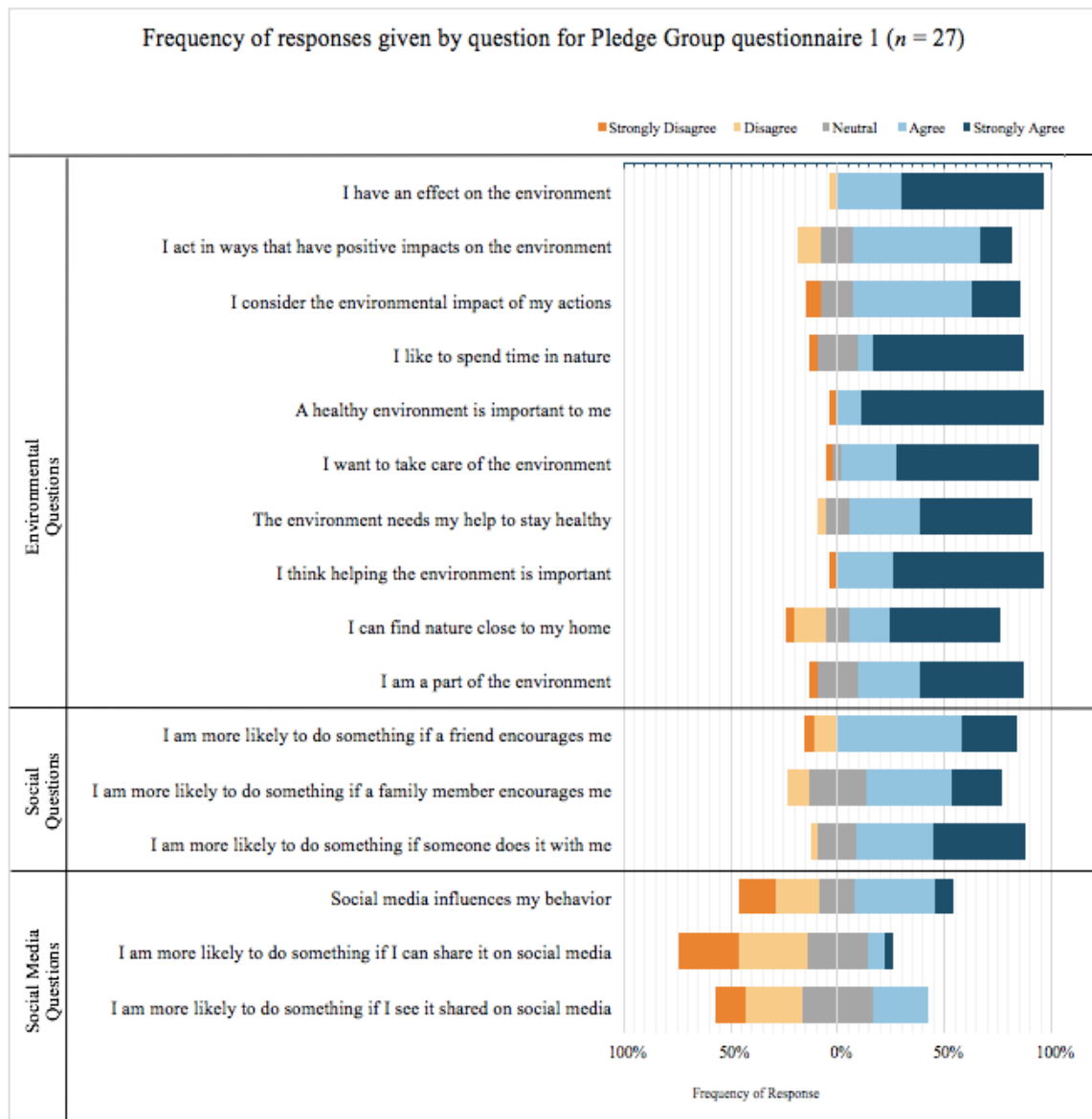


Figure 8. Pledge Group questionnaire 1 frequency of response by question, ($n = 27$).

Out of the 27 responses, the environmental questions and social questions garnered mostly agree and strongly agree responses, while the social media questions were answered with more disagree and strongly disagree responses. For example, nearly all respondents (97%) either strongly agreed (67%) or agreed (30%) to the first question, “I have an impact on the environment.” One respondent who selected the strongly agree

response explained, “Everything we do as humans impacts the environment.” Similarly, the question asking, “A healthy environment is important to me” had the highest percentage of strongly agree responses; 85% of respondents strongly agreed and 11% agreed. I believe the remaining 4% (1 response) indicating a strongly disagree response was chosen by mistake. If this response was chosen in error, the percentage of responses that agree or strongly agree with this question would have been 100% (Figure 9).

A healthy environment is important to me
($n = 27$)

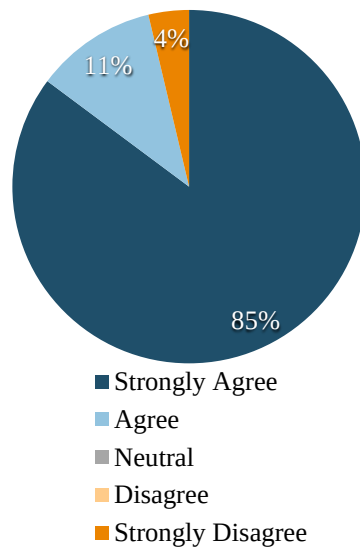


Figure 9. Frequency of responses given to the question, “A healthy environment is important to me” on the Pledge Group questionnaire 1, ($n = 27$).

The social media questions, on the other hand, had many strongly disagree and disagree responses that I believe were correctly chosen. The mostly strongly disagreed question was, “I am more likely to do something if I can share it on social media.” This was also true with the Comparison Group responses to the same question; over half the

respondents (56%) answered that they either disagreed (30%) or strongly disagreed (26%) with the statement (Figure 10).

I am more likely to do something if I
can share it on social media ($n = 27$)

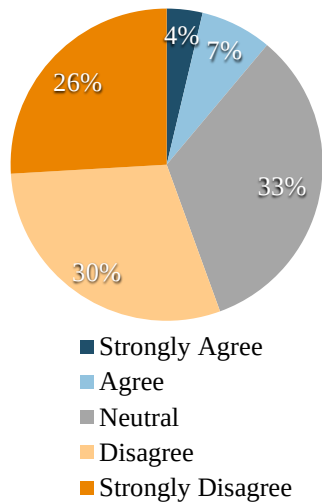


Figure 10. Percentage of response values given to the question, “I am more likely to do something if I can share it on social media” on the Pledge Group questionnaire 1, ($n = 27$).

Support for responses was evident in the Pledge Group explanations to the social media questions. Like Comparison Group participants, many did not seem to value social media and often mentioned they did not let it impact them. One respondent stated, “[I] try to not let social media influence my decisions” and another respondent similarly answered, “I don't care about social media.” The one respondent who strongly agreed response to this question, seemed to select the opposite value than what they intended, stating, “I never share anything on social media,” indicating a disconnect between their explanation and their value selection.

Pledge Group responses to the questionnaire were similar to the Comparison Group; in general, most respondents agreed with the environmental and social questions, and disagreed with the social media questions. Their short-answer responses were thoughtful and only a few questions were left unanswered. The first short-answer question asked the YCC enrollees to consider how frequently they participated in environmental-friendly behavior. Most respondents (21 out of 27) mentioned “every day”, “often”, “a lot” or “as much as I can”, and only two of the 27 respondents reported “Not as often as I’d like to,” or as one of those respondents explained, “Honestly, not to [sic] often but I plan to change that once I leave.”

Question 2 had respondents list those environmentally-friendly activities they previously admitted to participating in. As with the Comparison Group, the most often mentioned activity was “recycle” or “recycling”, followed by conserving water and/or energy and using modes of transportation other than cars (Figure 11). It is probable that the Pledge Group was exposed to the same encouragement from the YCC Co-directors to participate in these activities while in YELL.

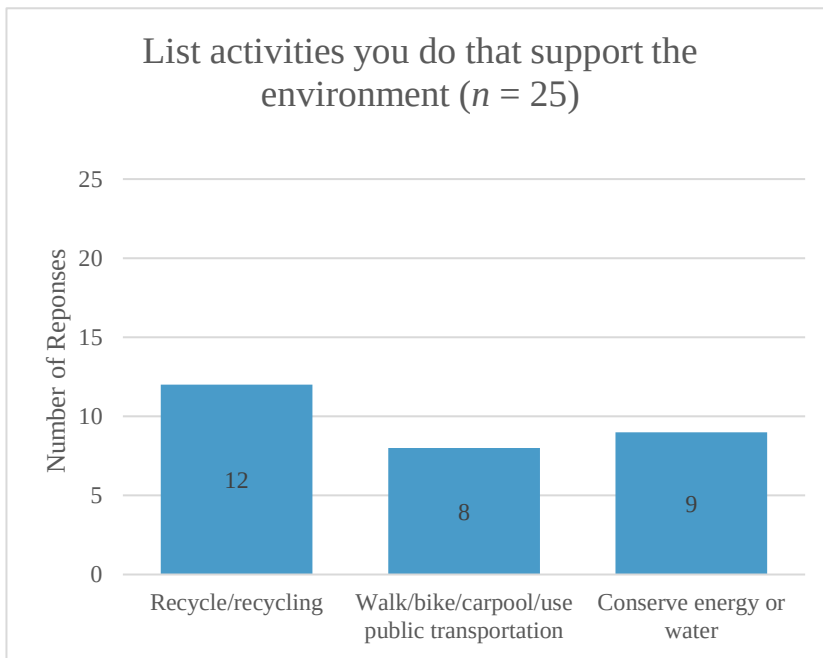


Figure 11. Environmentally-friendly activities listed on Pledge Group questionnaire 1, (n = 25).

Finally, when responding to the question, “How do you think the YCC program will effect your outlook or behavior towards the environment when you return home?” YCC enrollees overwhelmingly (25 out of 26 responses) stated that there would be an impact, and often described that change being in how much conservation work they would do and how often they would talk to others about it, as this respondent explained, “I will take my knowledge of conservation home with me and encourage and teach people I know these habits too.” Only one respondent stated that, “It will remain the same as in when I first started the program” but another one of their short-answer responses showed that they already have an active lifestyle in environmentally-friendly behavior, “Really often I work for a nonprofit organization that works for the environment.”

Questionnaire 2

Comparison Group

As a whole, the Likert-scale question responses on the Comparison Group questionnaire 2 were more broadly distributed amongst the five possible response values than they were on questionnaire 1 (Figure 12).

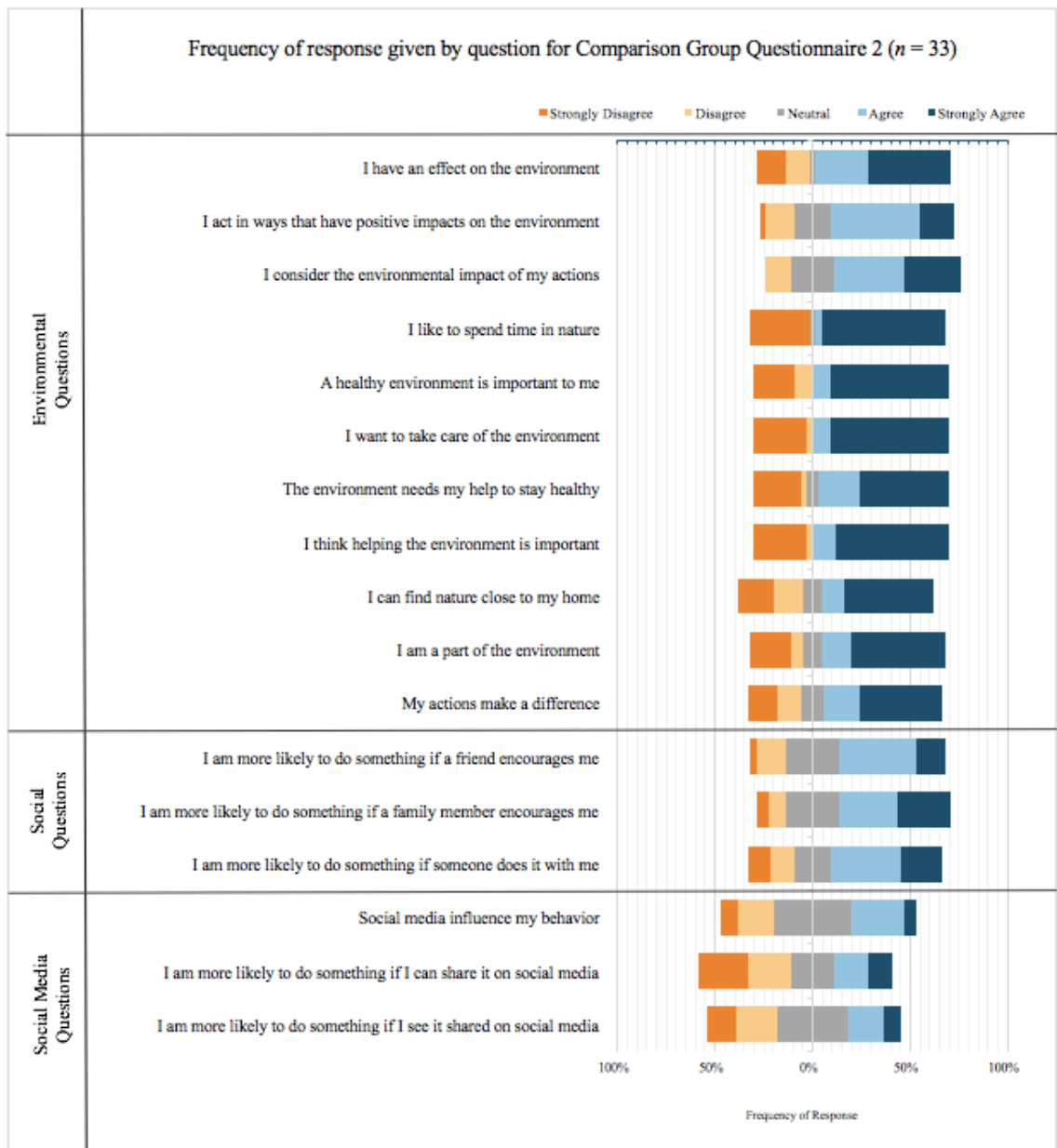


Figure 12. Comparison Group questionnaire 2 frequency of response by question, ($n = 33$).

Although many participants still strongly agreed with the majority of environmental questions, a number of them also selected the strongly disagree responses as well. Since questionnaire 1 did not have as many participants selecting strongly

disagree to those questions, I looked at the question explanations for clues as to what caused the switch. These explanations led me to believe the strongly disagree responses were chosen by mistake. For example, a respondent stated that they strongly disagreed with the question, “I like to spend time in nature” but they responded, “I wish I could put more than a 5 [strongly disagree]. Nature is my favorite place to be.” Another participant responded to the same question with a strongly disagree answer, but explained, “My time in Yellowstone National Park and with the YCC has been one of the most incredible and meaningful experiences of my life. I now look to make time to spend outdoors in any way that I can.” Conversely, some participants responded that they agreed or strongly agreed to the social media questions, which previously had had few responses of the sort. Again, I believe these were confused with the response they were intending, such as this participant who responded that they strongly agreed to the question, “Social media influences my behavior” with the explanation, “I don’t use it.”

Considering these mistaken answers, the data are more broadly spread out than I believe they were meant to be. Thus, it is difficult to draw strong conclusions from these responses if their meanings are questionable. However, in general terms, the Comparison Group more frequently strongly agreed and agreed with the environmental questions and social questions, but chose more mixed responses with greater frequency of disagree or strongly disagree responses for the social media questions.

After analyzing questionnaire 2 for general trends, comparisons were made between the ten individuals who completed both questionnaire 1 and questionnaire 2. These pairs were identified by their initials, and they were the only YCC enrollees with

those initials from either the Comparison Group or Pledge Group; therefore, they could be positively identified as from the Comparison Group. Any other possible pairs were not analyzed due to the chance of making mismatches.

For those ten pairs, each question was compared for the individual participants by looking at their answers between questionnaire 1 and questionnaire 2 (Appendix G). Eight out of ten pairs matched their responses similarly between questionnaire 1 and questionnaire 2. Indeed, one participant (CGP3) only differed on one question between the two by changing their response to the question, “I am more likely to do something if someone else does it with me” from agree to strongly agree six months later and explaining, “The best support follows through with you.” The other seven similarly responding pairs changed their answers on as many as 10 questions, or as few as six questions. Out of these changes in response, usually, there was only one value difference (i.e. an agree to a strongly agree) between those answers.

Unlike the similar responses on previous eight pairs, there were two other pairs that had exact opposite responses to the questions six months later. Using the other pairs as reference and the qualitative responses from these individuals, it is likely their responses were accidentally chosen in the same way as mentioned earlier. For example, when CGP1 responded to questions that they previously strongly agreed with, such as, “I want to take care of the environment” they responded with a strongly disagree response but explained, “I understand the importance and value of environmental protection and conservation.” Similarly, CGP9 stated that they strongly agreed to the question, “I am more likely to do something if someone does it with me,” but six months later they

responded that they strongly disagreed and explained, “When we are on the water in crew, I’m pushed more than ever to exert myself, I cannot stop rowing when there are 7 [sic] others going through the same pain as I, everything that I am feeling, they are feeling as well. On the long days of practice, I couldn’t make it without them by my side, and on race day I couldn’t drain myself without them either.” Their explanations did not fit with their value responses; therefore, I believe they selected the opposite value responses than what they intended. If that was the case, their responses were, in fact, similar between the two questionnaires. If these answers were indeed similar, it indicated that all ten individuals showed little change over the six months in their responses, demonstrating that the YCC program did not necessarily influence their attitudes or behaviors toward the environment.

Additionally, the short-answer responses to the Comparison Group questionnaire 2 were similar to the short-answer responses on questionnaire 1. As was previously done with questionnaire 1, common words and trends were coded and counted for each question. The first question, “How often do you participate in environmentally friendly behavior?” garnered 29 responses. Of those 29 responses, 10 reported that they participate “every day” or “daily” and seven others said they participate in those behaviors “often.” One participant explained their behavior in this way, “I try as often as I can through small everyday tasks.” However, a few others responded that they could improve, like this respondent admitted, “Less than I would like. Every day [sic] life gets in the way and I have less time and effort to put towards it.”

The next short-answer question, “List activities you do that support the environment” had 27 individual responses, with three common categories of activities listed (Figure 13).

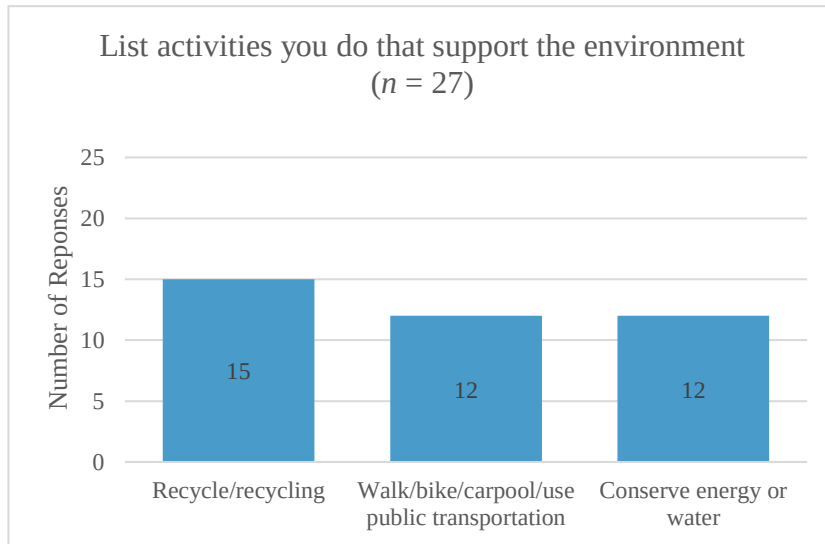


Figure 13. Environmentally-friendly activities listed on Comparison Group questionnaire 2, ($n = 27$).

These three activities were echoed from the same questionnaire 1 short-answer question. Slightly more than half of the respondents listed “recycle” or “recycling” as an activity that they participated in, and 12 respondents stated that they used some form of alternative transportation beside cars, and also 12 responded that they conserve water and/or energy. Some respondents listed just these main categories of activities, but a few others said they participated in some unique activities as represented in this respondent’s answer, “Volunteer in the local parks with preservation and protection projects, help with outreach community events to education [sic] and inspire others to preserve and protect

nature, enrich and connect people to nature through fun activities like hiking, and donate to multiple organizations that do the same.”

The final question on questionnaire 2 asked the Comparison Group participants to explain how the YCC program has impacted their behavior toward the environment. Out of 30 responses, the overwhelming theme was that YCC certainly impacted their behavior, sometimes significantly so. One respondent explained, “It has helped me understand a lot about our impact on the environment, it taught me to treasure and appreciate every part that nature has to offer, because as our country continues to expand and industrialize, someone has to speak up and share this greatness with others.” Additionally, another respondent explained the impact of the program on their life, “Thanks in part to YCC, I now aspire to go to college for conservation biology and ecology as well as possibly work for the park service in the future. Also, the little actions that were engrained in our minds at YCC, such as composting and conserving water, have definitely been carried over to my home.” Conversely, none of the respondents reported that the YCC program had little or no impact on them.

Pledge Group

To begin, like the analysis for Pledge Group questionnaire 1, the Likert-scale questions were evaluated for frequency of each value response given (Figure 14).

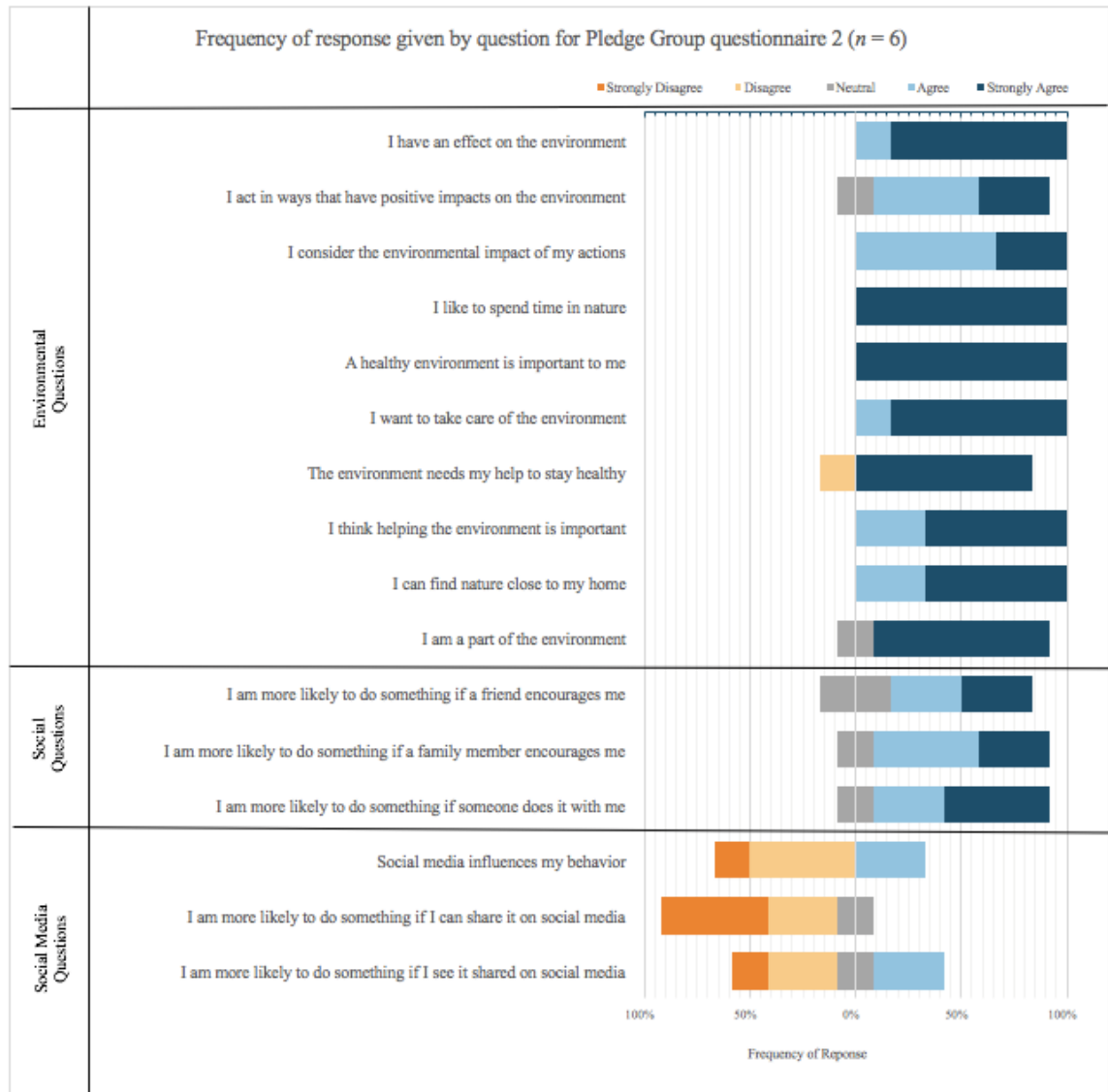


Figure 14. Pledge Group questionnaire 2 frequency of response by question, ($n = 6$).

All but one question had six responses, the other question, “My actions make a difference” had only five responses; therefore, it was removed from this data set. These respondents very clearly agreed and strongly agreed with the environmental and social questions, and disagreed and strongly disagreed with the social media questions. Indeed, two of the questions received 100% strongly agree responses, “I like to spend time in

nature” and “A healthy environment is important to me.” One respondent explained their response to the latter question, “We are setting the stage for our own future and for future generations so the environment we are creating now is the environment we will live in. Also the environment provides us with many uses both commercial and non commercial [sic] so the stronger it is the longer it will last.”

Conversely, the question that received the greatest strongly disagree responses was, “I am more likely to do something if I can share it on social media.” As one respondent explained, “I don't necessarily shape my actions and choices around the opinions others will have.” Fifty percent of respondents strongly disagreed and 33% disagreed (Figure 15).

I am more likely to do something if I can
share it on social media ($n = 6$)

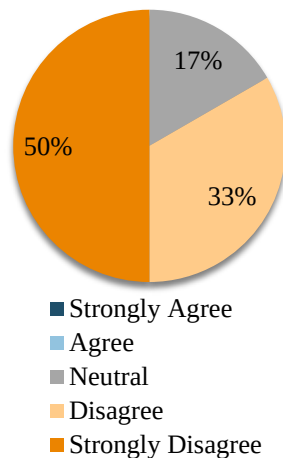


Figure 15. Frequency of response to the question, “I am more likely to do something if I can share it on social media” on Pledge Group questionnaire 2, ($n = 6$).

The first three short-answer questions were the same as on all the other questionnaires and were answered by five individuals. Like the Comparison Group,

everyone stated that they frequently participated in environmentally-friendly behaviors, such as recycling, using alternative transportation and conserving water and energy.

Additionally, their responses about the YCC program all reflected highly on the program and it was stated that it impacted some participants substantially. One participant explained, “YCC has allowed me to look at conservation from a different angle. I now see that such a small group of people can make a huge impact. Who knew that just a couple of kids could do things like rebuild whole trails or install bear boxes. This type of work has not only allowed me to protect the environment but it has opened up a career path.”

The next two questions asked the Pledge Group to explain their use of the Pledge Videos. The first question asked, “Did you create pledge videos to post to Instagram? Please explain why or why not.” All respondents stated “no” they did not make any pledge videos, validating my observations. A few respondents admitted they forgot, a few others seemed to have trouble understanding what to do, and one respondent stated that this was an out-of-the ordinary request for them, “I almost never post videos of myself on social media. I am more introverted.” The next question expanded on this idea, asking respondents, “If you did not create a pledge video, what would have encouraged you to do so?” One suggested “Not Instagram”, another offered, “Perhaps if there was a different way to express my support for the same idea. I would rather write something than post a video of myself talking.” Two others reiterated the previous concerns; they were confused about the process, and that they would forget no matter what.

The next two questions were similar to the previous two but were instead focused on the pledge coins. Five out of six participants responded “no” and one responded “yes” to the first question. Participants were asked, “Did you pass on the pledge coins? Please explain why or why not.” The participant that passed on their pledge coin said they did so, “To raise awareness.” Respondents who did not pass on a pledge coin explained that they lost their coins or forgot. One stated that they, “Haven’t found the right person” and one was confused by the meaning, “I was not totally sure of what they represented or what they were supposed to do for conservation.” Three individuals responded to the next question, asking what would have encouraged them to pass on the pledge coins. One person suggested the coins be online instead, “If it wasn't a physical coin. A Facebook post that you could share,” another student repeated that they needed to find the right person, and the final comment admitted the concept was lost, “I'm not sure. I think the campaign could be more compelling. I am very environmentally minded but I didn't really understand the concept.”

The next question asked, “How did the pledge videos and pledge coins influence your behavior towards the environment?” Despite no pledge videos and only one reported pledge coin pass, the responses were mixed but generally favorable to the concept. One respondent thought, “It was a good idea and would’ve raised awareness,” while another stated, “They did not have much of an effect on my behavior towards the environment. I was already very passionate about the environment.”

Finally, the last question of the Pledge Group questionnaire 2 asked participants to give any additional feedback or suggestions about the pledge video or pledge coin

ideas. Only two answers were given, and both were ideas previously mentioned, “A lot of people my age do not like posting videos of themselves on social media because it is very exposing. People might need another way to show support,” and “Make it a facebook [sic] or social media virtual coin.” These two answers seemed to contradict each other, and because there were no other suggestions, it would be difficult to draw strong conclusions from these responses alone.

INTERPRETATION AND CONCLUSION

Questionnaires

Upon reflection of the data from the questionnaire 1 and questionnaire 2, many insights and surprises were encountered. Assumptions had been made about these YCC enrollees, and their answers confirmed, but also refuted some of those ideas.

As hypothesized, the Pledge Group and Comparison Group questionnaires produced similar data. Both questionnaires showed trends that indicated the participants valued the environment. When considering that these individuals self-selected to live and work in YELL, the answers were not surprising. Nature, the environment and conservation must have appealed to them on some level for them to apply for the program initially, and the impact of their time in YELL before meeting me may have also influenced their responses.

Furthermore, the influence of family and friends and social pressure was strongly suggested in the questionnaire data. Many research papers used for this project discussed the influence of social pressure on behavioral change, so it was encouraging to find

support for this concept in my data. In fact, some of the participants chose to be part of the YCC because of encouragement from family.

Unlike the agreement toward the environmental questions and social questions, their responses to the social media questions were in disagreement, sometimes strongly so. This finding was very shocking at first. So often this age group is portrayed as being constantly “glued to their phones” that it seemed logical that their responses to the social media questions would have been positive. Although there were a few responses to that effect, like this participant who proclaimed, “I’m 16! Also social media is everywhere now,” the majority of responses disagreed that social media was a major influence in their lives and on their behavior. Again, considering these participants decided to join the YCC instead of staying at home for the summer, suggested that they could be less interested in technology and its influence.

The more negative responses to the social media questions might also have been due to the wording of the question. Because the participants reported their friends and family were an influence in their lives on the social questions, why then would they not select social media as an influence when all their friends and family are their friends on social media? There are many campaigns that teach teenagers to ignore the influence of social media and the YCC enrollee responses reflect this training, however, I wonder how true that is. Rewording these questions and using techniques that ask the same question in different ways might have been more successful in gleaning more accurate responses.

The short-answer questions were also responded to with many of the same key phrases and ideas. It was encouraging to see numerous responses indicating many of the

factors we typically consider environmentally-friendly, such as reduce, reuse, recycle, composting, riding a bike, turning off the lights, taking shorter showers, and carpooling were listed as common and frequent activities for these individuals. Likewise, their responses to the question about the influence of YCC on their behavior toward the environment was extremely powerful and uplifting. Their feedback speaks to the quality and success of the program and the hard work of the Education Program Manager and YCC Co-directors in creating a program that influences teenagers to become better stewards, leaders and citizens through the process.

Despite finding some trends and drawing some general conclusions, larger sample sizes would be needed to make stronger inferences.

Pledge Videos and Pledge Coins

The goal of this project was to determine whether social media pledge videos and pledge coins could be used to influence the pro-environmental behavior of the 2016 YCC enrollees. The Pledge Group questionnaires were created to provide explanatory support to these activities and possible behavior changes.

Unfortunately, with the electronic questionnaire error and the few responses to the Pledge Group questionnaire 2, there was not sufficient feedback to fully understand the lack of interest in the pledge videos and pledge coins. One idea, however, was to improve my delivery and follow up. A few improvements could have included, giving better explanations as to what the pledge video and pledge coins were meant for, allowing more time for them to create their pledge videos and uploading them to Instagram before leaving YELL, and sending out reminders for completing those pro-environmental

activities would have likely helped. However, without greater response, it is difficult to know why they were not successful concepts.

Social Media Journal

Throughout the six-month time frame when I was checking Instagram for Pledge Videos, I was astonished at the lack of participation. When I was creating my AR project, I was certain that including social media into the process would interest this age demographic. It was, therefore, very grounding to have results completely opposite of what I was expecting. Although I wonder, if it was possible to contact this group during the six-month time frame to remind them of the project, would it have been the encouragement they needed to create a pledge video?

Reflections

Answers to my research questions, “Do pledges posted on social media encourage pro-environmental behavior from YCC enrollees after leaving the park?” and, “Do pledge coins encourage a chain effect of pro-environmental behavior?” are unfortunately still unknown. Due to the lack of response about the pledge videos and pledge coins, neither of these questions could be answered.

Looking back on my AR project, it is hard not to be somewhat disappointed in the results. However, I have learned a tremendous amount because of these failures and unexpected complications, and because of these learning experiences I believe that I could do a better job on any future scientific research projects.

Suggestions for Future Research or Similar Projects

If I were to specifically do this project again, or to continue pursuing this research in the future, I would change a few methods and review other research findings to make the process more successful.

To begin, I would change a few of the questions. The responses given in the explanation sections were a good indicator that the questions I asked were not always as helpful as I was hoping. Furthermore, some questions garnered few written explanations for their responses and I would like to find out what it was about those questions that made the response hard or unappealing to explain. To help with these frustrations, I would give out the questionnaires to pilot groups to test the responses given before using them in the study. Also, conducting interviews with participants would help complete the picture of what the respondents truly meant in their answers.

Along with the concept of rewording questions, I believe that poor wording of a few of the questions produced data that were not easy to decipher. For example, I found it interesting that the social media questions had so many disagree responses, and wonder if that truly matches their behavior; what they say and perceive may be different from what they do. The questions could be reworded to instead give specific social media platforms, such as Facebook, Instagram, or Twitter, rather than the phrase, “social media.” Potentially, everyone could have a different definition of what social media are. Likewise, the questions might look at their experience with environmental concerns talked about through social media and whether that was an influence.

For the pledge videos and pledge coins, another area of improvement could be my delivery speech. I believe that one possible reason for the lack of participation in the

social media aspect of my AR project was due to the rushed presentation and lack of organization when I introduced the concepts. If I were to do it again, I would include a visual presentation, describing each step in more detail, rather than just giving a verbal description. Also, having more time set aside for the video production phase, allowing for the participants to have time before they had to clean up and leave the park to make their pledge videos and post them to Instagram would have been helpful. The Education Program Manager also agreed with this view and suspected the time was too rushed for the enrollees to fully focus on the project videos (Fuhrmann, B., personal communication, November 30, 2016). It is also possible that because they did not know me well, they did not have much at stake in the project and could easily disregard it; however, if I had spent more time with them throughout their session in YELL, maybe that could have made the project more meaningful and their trust in me would have strengthened.

Additionally, it would be helpful to review research on what makes something go “viral” on social media. What was it about the ALS Ice Bucket Challenge that made it so successful? Also, what is the most influential posting method to use; are videos, or photos more effective at sharing a message?

Finally, the largest area of improvement could have been in the communication between the Education Program Manager and myself. Had there been clearer directions from me, it is less likely the questionnaire mix-up would have happened. That one error caused such a substantial cascading effect on the rest of my data; it is easy to wish I had just said a few things differently earlier on.

That said, this system of having a middle person to go through to keep anonymity would not have to exist if different research permits were obtained. In the future, it would be preferred to design the project farther in advance in order to obtain the best research permit for the intended results.

VALUE

Overall, this project provided me with some valuable information about the YCC enrollees and, ultimately, it is a great place to start. Although one should be cautious about expanding results out to a broader population, we can say that the 2016 YCC enrollees agreed that they enjoy and feel connected to the environment. We also know that these individuals often agreed their behavior can be influenced by their friends and family, but not by social media. These insights were confirming for some assumptions, but shattered a few others.

Ideally then, these responses would be the baseline for an improved project that would be conducted annually to look for trends over time. If the pledge videos and pledge coins are presented in a different way with more time, is there a better response rate? Do all YCC sessions tend to attract individuals with these similar values? How do these individuals help grow the YCC message and reach? Does the influence of social media and technology change over time? Are there different ways that this age group might relate to environmental action via social media?

It would also be worth pursuing other avenues for social change. If social media does not speak to this particular group of teenagers, what does, and how do they normally influence their peers? Would those methods work better with another YCC group?

Another interesting avenue for further research would be comparing the YCC answers to a group with the same demographics but not involved in the outdoors to see how their responses differ. As human populations move more and more to urban areas, the likelihood of finding teenagers as interested in the environment might change. Also, conducting a long-term study to follow what the YCC enrollees are doing 10 years or 20 years later would be interesting.

Therefore, the value of this type of research can be seen from many perspectives. From the Education Program Manager in YELL, and also Conservation Corps directors all around the nation, to my own professional development. If these conservation programs tend to attract the same type of individual, we can use information from this study and others similar to it, to help target behavior change strategies to be as effective as possible. Additionally, if future studies look at similarly-aged groups in urban areas, these same questions could be analyzed and used to create more meaningful ways of encouraging pro-environmental behaviors. Finally, as an educator trying to encourage greater environmental stewardship, it is essential for me to understand my audiences' motivations.

If the ultimate goal of the YCC program is to create a new generation of conservation leaders, and, therefore, a society that is more environmentally-literate and sustainably-minded, then we need to have the most effective means of producing that behavior change. The future of our planet depends on it.

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APPENDICES

APPENDIX A

QUESTIONNAIRE 1

Your Initials:

YCC Questionnaire #1

Thank you for your dedication and hard work in the YCC program this year! I am an NPS park ranger and also a graduate student at MSU conducting a study on the behavior of YCC enrollees towards the environment. Although your participation is greatly appreciated, it is completely voluntary and will not be graded or in any way impact your schooling or career. After six months a follow-up questionnaire will be emailed to you to compare your responses. All answers will be anonymized using a coding system. Thank you for taking the time to complete this questionnaire.

For the following questions, circle the answer that best fits your opinion using the scale below, and please explain your responses.

1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Environmental Opinions	
1. I have an effect on the environment	1 2 3 4 5
Explain:	
2. I act in ways that have positive impacts on the environment	1 2 3 4 5
Explain:	
3. I consider the environmental impact of my actions	1 2 3 4 5
Explain:	
4. I like to spend time in nature	1 2 3 4 5
Explain:	
5. A healthy environment is important to me	1 2 3 4 5
Explain:	
6. I want to take care of the environment	1 2 3 4 5
Explain:	
7. The environment needs my help to stay healthy	1 2 3 4 5
Explain:	
8. I think helping the environment is important	1 2 3 4 5
Explain:	

9. I can find nature close to my home	1	2	3	4	5
Explain:					
10. I am a part of the environment	1	2	3	4	5
Explain:					
11. My actions make a difference	1	2	3	4	5
Explain:					
12. Social media influences my behavior	1	2	3	4	5
Explain:					
Social Opinions					
1. I am more likely to do something if a friend encourages me	1	2	3	4	5
Explain:					
2. I am more likely to do something if a family member encourages me	1	2	3	4	5
Explain:					
3. I am more likely to do something if someone does it with me	1	2	3	4	5
Explain:					
4. I am more likely to do something if I can share it on social media	1	2	3	4	5
Explain:					
5. I am more likely to do something if I see it shared on social media	1	2	3	4	5
Explain:					
Open Ended Questions					
How often do you participate in environmental friendly behavior?					
How do you think the YCC program will effect your outlook or behavior towards the environment when you return home?					

List activities you do that supports the environment.

APPENDIX B

COMPARISON GROUP QUESTIONNAIRE 2

Your Initials:

YCC Questionnaire 2

Hello again! Now, after six months have passed, I would like you to fill out this questionnaire again. Please fill it out honestly, considering how you are feeling at this present moment. Your participation is greatly appreciated, but it is completely voluntary and will not be graded or in any way impact your schooling or career. All answers will be anonymized using a coding system. Thank you for taking the time to complete this questionnaire.

For the following questions, circle the answer that best fits your opinion using the scale below, and please explain your responses.

1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Environmental Opinions	
1. I have an effect on the environment	1 2 3 4 5
Please share your experience:	
2. I act in ways that have positive impacts on the environment	1 2 3 4 5
Please give an example:	
3. I consider the environmental impact of my actions	1 2 3 4 5
Please explain:	
4. I like to spend time in nature	1 2 3 4 5
Please explain:	
5. A healthy environment is important to me	1 2 3 4 5
Please give two reasons:	
6. I want to take care of the environment	1 2 3 4 5
Please explain:	
7. The environment needs my help to stay healthy	1 2 3 4 5
Please explain:	
8. I think helping the environment is important	1 2 3 4 5

Please explain:					
9.	I can find nature close to my home	1	2	3	4 5
Describe the natural area:					
10.	I am a part of the environment	1	2	3	4 5
Please explain:					
11.	My actions make a difference	1	2	3	4 5
Please give an example:					
12.	Social media influences my behavior	1	2	3	4 5
Please list two reasons:					
Social Opinions					
1.	I am more likely to do something if a friend encourages me	1	2	3	4 5
Please give two examples:					
2.	I am more likely to do something if a family member encourages me	1	2	3	4 5
Please explain:					
3.	I am more likely to do something if someone does it with me	1	2	3	4 5
Describe a situation when you did this:					
4.	I am more likely to do something if I can share it on social media	1	2	3	4 5
Please explain:					
5.	I am more likely to do something if I see it shared on social media	1	2	3	4 5
Please explain:					
Open Ended Questions					
How often do you participate in environmental friendly behavior?					

List activities you do that supports the environment.
How has the YCC program impacted your behavior towards the environment? Please list several examples for me.

APPENDIX C

PLEDGE GROUP QUESTIONNAIRE 2

Your Initials:

YCC Pledge Questionnaire 2

Hello again! Now, after six months have passed, I would like you to fill out this questionnaire again. Please fill it out honestly, considering how you are feeling at this present moment. Your participation is greatly appreciated, but it is completely voluntary and will not be graded or in any way impact your schooling or career. All answers will be anonymized. Thank you for taking the time to complete this questionnaire.

For the following questions, circle the answer that best fits your opinion using the scale below, and please explain your responses.

1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Environmental Opinions					
I have an effect on the environment	1	2	3	4	5
Explain:					
I act in ways that have positive impacts on the environment	1	2	3	4	5
Explain:					
I consider the environmental impact of my actions	1	2	3	4	5
Explain:					
I like to spend time in nature	1	2	3	4	5
Explain:					
A healthy environment is important to me	1	2	3	4	5
Explain:					
I want to take care of the environment	1	2	3	4	5
Explain:					
The environment needs my help to stay healthy	1	2	3	4	5
Explain:					
I think helping the environment is important	1	2	3	4	5
Explain:					
I can find nature close to my home	1	2	3	4	5
Explain:					
I am a part of the environment	1	2	3	4	5
Explain:					
My actions make a difference	1	2	3	4	5
Explain:					
Social media influences my behavior	1	2	3	4	5
Explain:					

Social Opinions					
I am more likely to do something if a friend encourages me	1	2	3	4	5
Explain:					
I am more likely to do something if a family member encourages me	1	2	3	4	5
Explain:					
I am more likely to do something if someone does it with me	1	2	3	4	5
Explain:					
I am more likely to do something if I can share it on social media	1	2	3	4	5
Explain:					
I am more likely to do something if I see it shared on social media	1	2	3	4	5
Explain:					
Open Ended Questions					
How often do you participate in environmental friendly behavior?					
How has the YCC program impacted your behavior towards the environment?					
List activities you do that supports the environment.					
Did you create Pledge Videos to post to Instagram? Please explain why or why not.					
If you did not create a Pledge Video, what would have encouraged you to do so?					
Did you pass on the Pledge Coins? Please explain why or why not.					
If you did not pass on the Pledge Coins, what would have encouraged you to do so?					
How did the Pledge Videos and Pledge Coins influence your behavior towards the environment?					
Please give any additional feedback or suggestions on the Pledge Videos and Pledge Coins you may have.					

APPENDIX D

PLEDGE GROUP SOCIAL MEDIA JOURNAL

Date of Observation	Number of Posted Videos	Notes
August 16, 2016	0	Pledge Video idea presented to the Pledge Group
August 19, 2016	1	My video example is posted to Instagram #YELLinspired @YELLinspired
September 19, 2016	1	No other videos have been posted besides mine
October 19, 2016	1	No other videos have been posted besides mine
November 19, 2016	1	No other videos have been posted besides mine
December 19, 2016	1	No other videos have been posted besides mine
January 19, 2017	1	No other videos have been posted besides mine
February 19, 2017	1	No other videos have been posted besides mine

APPENDIX E

TIME FRAME, PLANNED AND ACTUAL

Time Frame, Planned

7/13-7/15/16 - YCC Session 1 (Comparison Group)

7/12/16 - Comparison Group completed questionnaire 1 (in person)

7/18 - 8/19/16 - YCC Session 2 (Pledge Group)

8/16/16 - Pledge Group completed questionnaire 1 (in person)

1/12/17 - Comparison Group questionnaire 2 completed (online)

2/16/17 - Pledge Group questionnaire 2 completed (online)

2/16/17 - End of posting period for pledge videos to Instagram for Pledge Group

July - February - Journaling

Time Frame, Actual

7/13-7/15/16 - YCC Session 1 (Comparison Group)

7/12/16 - Comparison Group completed questionnaire 1 (in person)

7/18 - 8/19/16 - YCC Session 2 (Pledge Group)

8/16/16 - Pledge Group completed questionnaire 1 (in person)

1/13/17 - Comparison Group questionnaire 2 emailed out to both Comparison Group and Pledge Group (online)

1/31/17 – Response window closed for Comparison Group questionnaire 2

2/16/17 – Emailed out and reopened Comparison Group questionnaire 2 (online)

2/16/17 – Pledge Group questionnaire 2 emailed out (online)

2/28/17 – Response window closed for Comparison Group questionnaire 2

2/28/17 – Response window closed for Pledge Group questionnaire 2

2/16/17 - End of posting period for pledge videos to Instagram for Pledge Group

July - February - Journaling

APPENDIX F

IRB EXEMPTION FORM



INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

960 Technology Blvd. Room 127
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 Montana State University
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Chair: Mark Quinn
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MEMORANDUM

TO: Nicole Sedgeley and Walt Woolbaugh
FROM: Mark Quinn, Chair *Mark Quinn Ch*
DATE: July 11, 2016
RE: "Effect of Social Media and Pledge Coins on Pro-Environmental Behavior of Youth Conservation Corps Enrollees in Yellowstone National Park" [NS071116-EX]

The above research, described in your submission of July 8, 2016, is exempt from the requirement of review by the Institutional Review Board in accordance with the Code of Federal regulations, Part 46, section 101. The specific paragraph which applies to your research is:

- X (b) (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
- X (b) (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.
- _____ (b) (3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.
- _____ (b) (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available, or if the information is recorded by the investigator in such a manner that the subjects cannot be identified, directly or through identifiers linked to the subjects.
- _____ (b) (5) Research and demonstration projects, which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.
- _____ (b) (6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed, or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the FDA, or approved by the EPA, or the Food Safety and Inspection Service of the USDA.

Although review by the Institutional Review Board is not required for the above research, the Committee will be glad to review it. If you wish a review and committee approval, please submit 3 copies of the usual application form and it will be processed by expedited review.

APPENDIX G

COMPARISON GROUP PAIRED QUESTIONNAIRE RESPONSES

