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A Case Study of Motivating Factors Related to Recycling in the Workplace

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A CASE STUDY OF MOTIVATING FACTORS RELATED TO RECYCLING IN THE WORKPLACE

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Abstract

Improving recycling behavior in the workplace can reduce environmental problems by significantly cutting down on waste being sent to the landfill. A new ordinance in Lincoln, Nebraska that bans cardboard from the landfill beginning April 2018 presents serious challenges to workplaces' current waste management, including the University of Nebraska-Lincoln's. The key to successfully transitioning to comply with this new ordinance is employee participation in recycling programs. To change employees' current recycling behavior and encourage more recycling in the workplace, it is necessary to have a thorough understanding of what motivates employees to recycle. The Theory of Planned Behavior (TPB) was used as a basis for this study in order to uncover motivating factors related to recycling behavior in the workplace. The study also tests to see if recycling rate and environmental impact feedback are successful at increasing recycling. The findings suggest that employees have a positive attitude toward recycling and feel social pressure to recycle while at work. Findings also suggest there may be some existing barriers to recycling while at work. The implications of the findings for designing interventions to improve recycling behavior are discussed.

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1. INTRODUCTION

1.1. *Problem Statement*

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
>
> -Brundtland Commission, *Our Common Future*, 1987

Considering the Brundtland (1987) definition of sustainability, it is clear that humanity does not use resources in a sustainable manner. In other words, resources are used in such a way that future generations will be negatively impacted. A large portion of resources that are used end up in the landfill, so much so in the United States that we are often labeled "a throwaway society" (Goldsmith, 2011). In 2013, Americans generated over 250 million tons of municipal solid waste, more than four pounds per person per day (EPA, 2015). Solid waste creates enormous environmental problems. Along with limited resources, there is limited landfill space (Daniels, 2014).

Approximately 54% of total waste in the United States is generated by the commercial sector (EPA, 2013). The average American adult spends a major part of their time in the workplace (Ruepert, 2016). Yet, much of the current research and efforts related to recycling, waste reduction, and other pro-environmental behaviors (PEB) focuses on households (Oke, 2015). Encouraging and educating individuals about pro-environmental behaviors, like recycling, in the workplace has the potential to significantly reduce environmental problems, specifically the problem of solid waste (Staddon, 2016).

When thinking about recycling behavior, it is easy to assume that household recycling behavior will closely reflect how individuals behave at work. However, even individuals who recycle at home may not do so in the workplace (Oke, 2015). In fact, many studies have shown that household pro-environmental behavior is *different* than workplace pro-environmental behavior (McDonald, 2011). Thus, even though PEB has been extensively studied in the

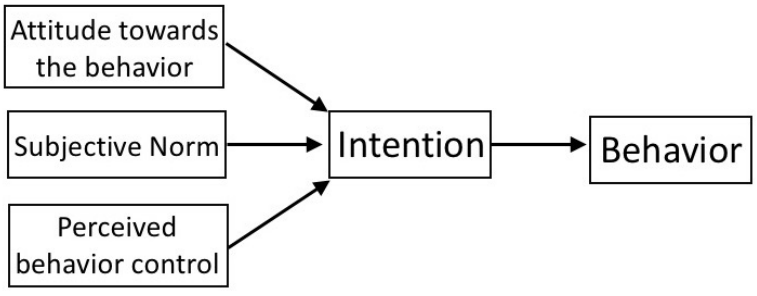
household setting, that research and the approaches found to successfully increase household-PEB cannot be transferred to the workplace unreservedly (Tudor, 2007). This study will therefore add to the current research on workplace recycling. More specifically, this study has two main goals: firstly, to uncover motivational factors and potential barriers related to workplace recycling using a commonly tested model; secondly, to test the effectiveness of recycling rate feedback and environmental impact feedback in encouraging more workplace recycling.

1.2. Literature Review

The Theory of Planned Behavior

The model used is based on the Theory of Planned Behavior (TPB). TPB is commonly used in social psychology to study behavior in many different settings; recent empirical research has found evidence for its validity in the workplace setting (Tonglet, 2004). TPB is a cognitive approach to predicting behavior; it assumes decisions related to behavior are rational and are determined by a logical sequence of thoughts (Ajzen, 1991). The principle idea behind this theory is that when faced with a choice, an individual will weigh expected benefits and costs related to each choice and then choose the option that offers the greatest total benefit or least total cost (McDonald, 2011). The theory takes into account an individual's intention, attitude towards the behavior, subjective norm, and perceived behavior control, as shown in Figure 1.

Figure 1. Theory of Planned Behavior (Ajzen, 1991).



Attitude Towards Behavior

As Figure 1 depicts, a key concept of TPB is that an individual's behavior is dependent, to an extent, on the attitude of the behavior. Attitudes toward the behavior are influenced by the individual's beliefs and evaluations of it. The attitude has the potential to lead to an intention to act. However, the theory recognizes that attitudes alone do not influence or predict behavior (Tonglet, 2004).

Subjective Norms

Subjective norms, *i.e.*, how people would view the individual if the individual were to perform the behavior, can also influence intentions in certain situations. In other words, the subjective norm is an employee's own estimate of the social pressure to perform of not to perform the behavior of recycling while at work (Shrestha, 2014).

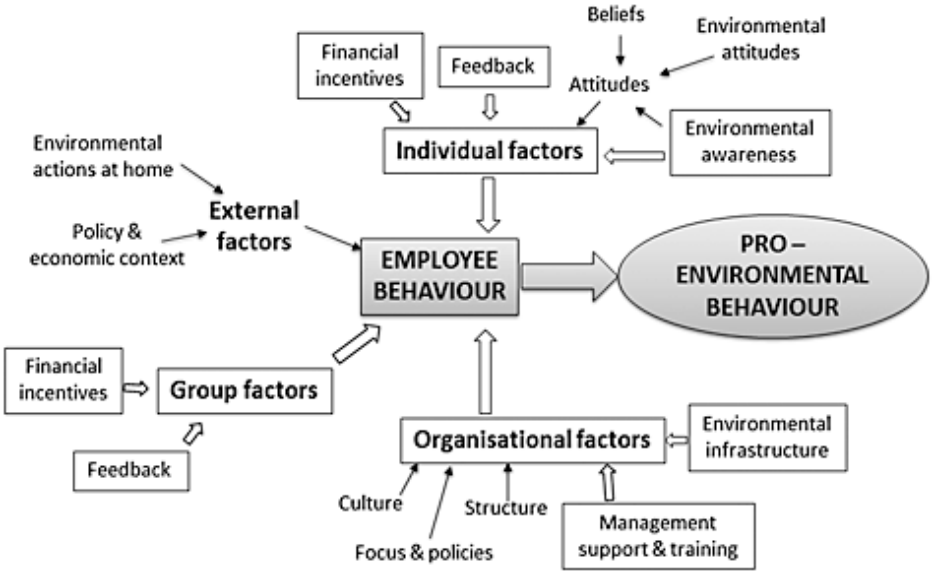
Perceived Behavior Control

The theory also highlights that perceived behavior control (PBC) can influence intention, because in order to act out a behavior, the individual must perceive that it is possible and relatively easy to behave as intended (Ajzen, 1991; McDonald, 2014). For example, an individual may have the intention to recycle, but is unable to do so because she or he does not know where the recycling bins are. Thus, this person is restricted in their behavior by lack of perceived behavior control.

Expanded Models Related to Workplace Recycling

Recent research, namely meta-analyses, have expanded this TPB model to include other factors more specifically related to workplace PEB motivations. Young et al. reviewed recent literature and examined 17 articles in order to create a modified model that included determinants other than those found in TPB, shown in Figure 2 (Young, 2013).

Figure 2. Process framework for workplace PEB (Young, 2013).



There are many factors in Young's framework, separated into four categories: individual, group, organization, and external. As seen in the framework, "feedback" appears both as a group factor and an individual factor. The impact of feedback on PEB, especially energy conservation behavior, has been explored in multiple studies. These studies have found evidence that providing employees feedback on energy use can impact individual's behavior and reduce total energy use in the workplace. A study conducted at the University of Nebraska-Lincoln (UNL) found that providing eight employees who worked in a small building on UNL's east campus with bi-weekly energy feedback over a two-week period reduced the building's total energy use by 13.46%. The feedback consisted of amount of energy used (e.g. kWh), energy cost (e.g. $), and environmental impact (e.g. amount of greenhouse gas emissions that were saved). The researchers combined this feedback with suggestions on how individuals can reduce their energy use in the workplace (Auringer, 2015).

This study aims to test if feedback can be successfully applied to a different pro-environmental behavior: paper and cardboard recycling. This research will investigate the effect

of using environmental impact feedback on improving occupant paper and cardboard recycling behavior in the workplace.

The reasons for focusing on paper and cardboard are threefold. Firstly, the data on how much paper and cardboard are recycled at UNL buildings is more easily accessible as compared to plastic or other materials; UNL's Waste and Recycling Office collects paper and cardboard recycling data on a regular basis. Secondly, paper and cardboard are used copiously in many workplaces. A statewide waste characterization study found that 47.93% of Nebraska's commercial sector's waste is paper fibers (Engineering Solutions & Designs, Inc., 2009). Being that it is such a significant part of a workplace's waste stream, improving paper and cardboard recycling behavior could be very beneficial for waste management.

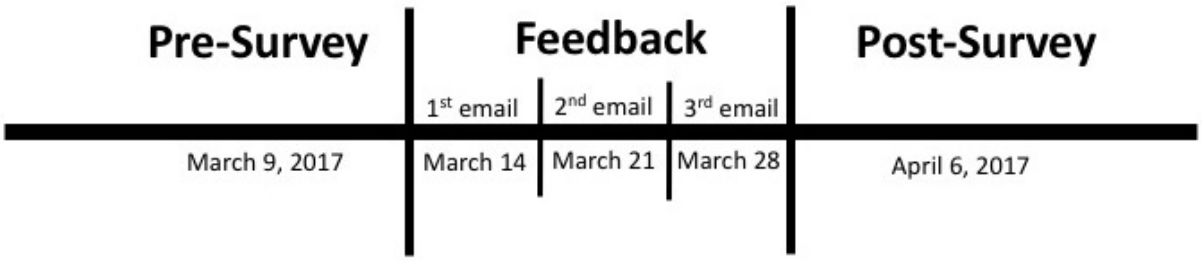
Finally, Lincoln's landfill receives 19,000 tons of cardboard every year. In an attempt to reduce the amount of waste entering the Lincoln landfill, the City Council has passed an ordinance to ban cardboard from the landfill, which will be put into effect April 2018 (Lincoln City Council, 2017). A landfill ban, in isolation, may not be ideal because it may lead to unlawful disposing in unauthorized areas. Therefore, landfill bans are most successful when other measures aimed at improving recycling behavior are implemented alongside it (University of Nebraska Public Policy Center, 2015). In order to optimize the success of this upcoming landfill ban and to make the transition smoothly, with the least amount of inconvenience, it is important to research reform measures to improve cardboard recycling behavior now.

2. METHODOLOGY

2.1. *Overview*

This study had three main steps: designing and distributing a pre-survey, designing and delivering feedback to building occupants, and administering a post-survey. A timeline of these steps is seen in Figure 3 below and each step is explained in further detail in the following sub-sections.

Figure 3. Timeline of Study Components



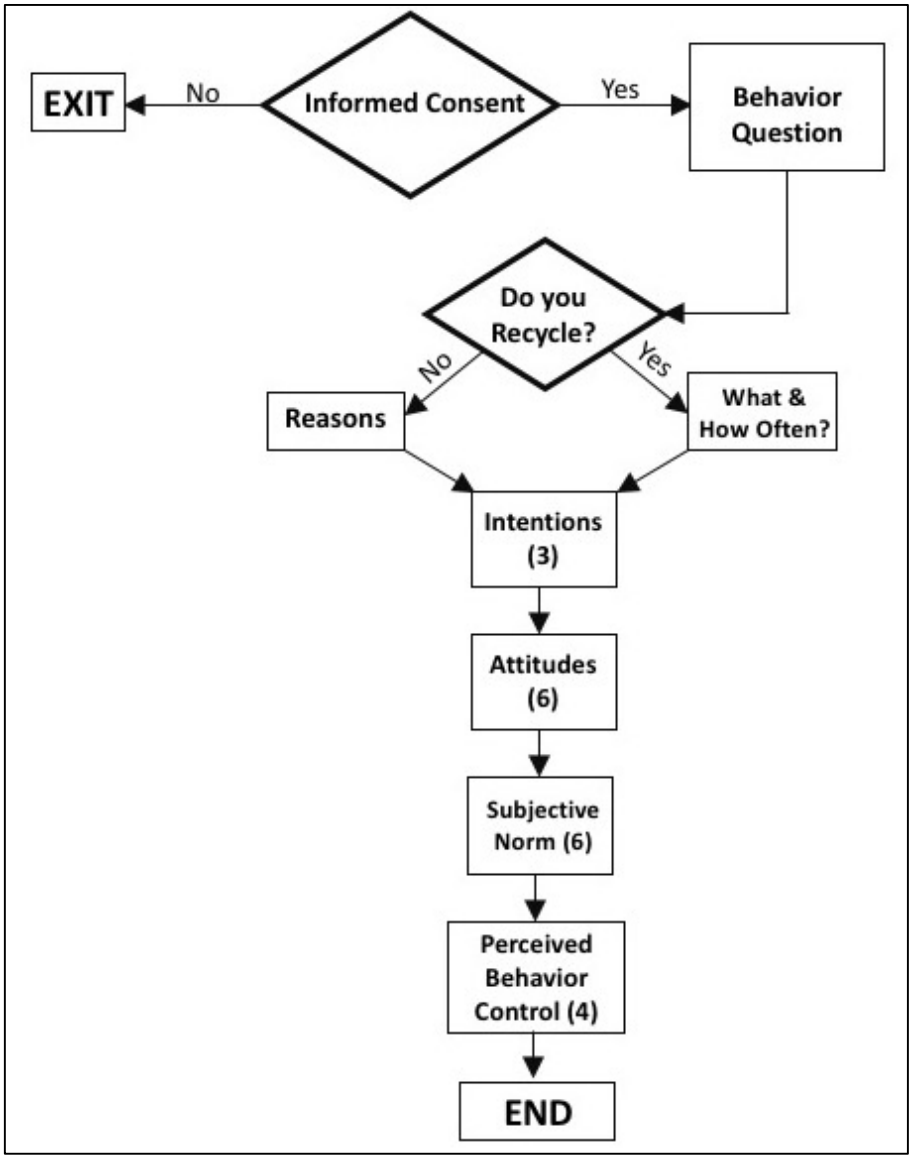
2.2. *Pre-Survey Design and Distribution*

The overall objective of this research is to further understand employees' recycling behaviors in the workplace and what factors motivate, discourage, or do not affect those behaviors. As seen in the literature review in the previous section, a common model that is implemented to study behavior is the Theory of Planned Behavior (TPB). The survey, found in Appendix A, was designed to measure the components of TPB: behavior, intention, attitude, subjective norm, and perceived behavior control.

To measure behavior, the survey included a question if respondents recycle at work or not. Depending on if they answered 'yes' or 'no' they were asked two different sets of questions. The respondents that answered 'yes' were asked what materials they recycle and how often they

recycle those materials. For the ones that answered ‘no’, the questions that followed asked reasons for not recycling. All respondents were then asked questions asking about intention, attitudes, subjective norm, and perceived behavior control. These questions were all measured on seven-point Likert scales. Intention was directly measured through three questions. Six questions measured attitudes toward recycling, six questions measured the subjective norm, and three questions measured perceived behavior control. Figure 4 below depicts how the survey questions were asked and how the survey flowed.

Figure 4. Steps Participants Took While Filling Out the Survey.



For this survey, it was important for the question sets that measured different components to have high internal consistency, that is, how closely a set of items is related as a group. Results were analyzed for internal consistency using Cronbach's alpha ($\propto$) test. A rule of thumb for interpreting Cronbach's alpha for Likert scale questions is $\propto \geq 0.7$ are accepted as having internal consistency.

The survey was constructed using Qualtrics, an online survey software (Qulatrics, 2017). The survey link was distributed via email. The survey link was sent to the 19 occupants in the study building, AgComm (details on this building are in the next sub-section).

2.2 *Selection of Study Building*

In order to choose a study building and control building that would work well for this research, three criteria were set: the main occupants were UNL employees (including faculty and staff), there were limited students or visitors coming and going, and the building had their own, separate loading dock where their refuse and recycling was collected. The Agricultural Communications Building (AgComm) on UNL's East Campus met these criteria and was selected as the study building. AgComm houses the Agricultural Leadership, Education, and Communication (ALEC) Office as well as the Institute of Agriculture and Natural Resources (IANR) Media. ALEC has five employees and IANR Media has 14 employees, making a total of 19 building occupants.

2.3. *Feedback distribution and design*

The participants (N=19) received weekly feedback on their paper and cardboard recycling rate over a three-week time period. Feedback was sent via email once a week on Tuesday. It was sent to all AgComm occupants. Data needed to calculate recycling rate was

provided by UNL's Waste and Recycling office. Recycling rate was calculated using the following equation:

$$\frac{total\ paper\ \&\ cardboard\ recycling\ (lbs)}{\left(total\ paper\ \&\ cardboard\ recycling\ (lbs)\right) + \left(total\ refuse\ (lbs)\right)} \times 100\% = Recycling\ Rate\ (\%)$$

In order to make the recycling rate feedback more effective, it was translated into environmental impact. Environmental impact was presented in the form of amount of resources that were saved through recycling. The resources represented include gallons of oil, number of trees, amount of energy (kWh), gallons of water, and cubic feet of landfill space.

The recycling-rate feedback and related environmental impact feedback was presented in the form of an infographic (example shown in Appendix B) summarizing one week worth of recycling. Along with feedback and environmental impact, the infographics contained a goal-setting statement; for example, "How can you help improve the recycling rate to 40%?".

2.4. *Post-Survey*

The post-survey, identical to the pre-survey, was sent out on April 6, 2017 following three weeks of feedback. Nine respondents, who indicated they were interested in taking the post-survey, received the link via email. The pre- and post-survey results were compared and contrasted in order to see if recycling feedback impacted participants' attitudes or other motivations to recycle.

3. RESULTS

3.1. Pre-survey

Table 1. Summary of Results from Pre-Survey.

Variable	N	Min.	Max.	Mean	Std. Deviation	Cronbach's Alpha
Frequency of P&C Recycling	11	1	5	4.05	1.48	N/A
Intention	12	1	7	5.89	1.21	0.95
Attitude	12	1	7	5.81	1.48	0.69
Subjective Norm	12	-63	+63	+22.22	12.54	0.64
Perceived Behavior Control	12	1	7	5.19	1.81	0.95

From the sample-size of 19, 12 responded to the pre-survey, a response rate of 63%. Survey results indicate that the vast majority of respondents recycle while at work (11 out of 12 respondents, or 92%). The 11 respondents who indicated that they recycle while at work were also asked with what frequency they recycle paper and cardboard on a (1-5) Likert scale, with (1) being never and (5) being always. The average frequency of recycling score was 3.90. Only one person indicated that they do not use cardboard while at work, thus do not recycle it.

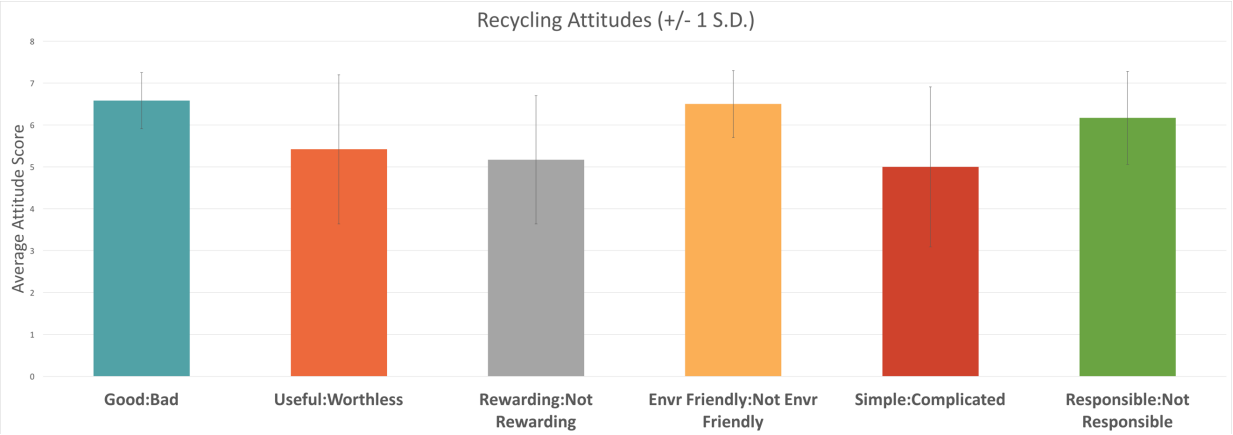
One respondent indicated that (s)he did not recycle while at work and was asked an additional question to discover potential reasons (s)he does not recycle. The respondent agreed with the statements: “I do not recycle at work because recycling bins are always full” and “I do not recycle because there are not enough recycling bins near me.” The respondent disagreed with the statement, “I do not recycle because nobody in my building recycles.”

Collectively, participants scored a 5.89 on a (1-7) Likert scale measuring their intention to recycle while at work in questions four through six. A value of (1) indicates little to no intention to recycle, and a value of (7) indicates a strong intention to recycle while at work.

The respondents produced a 5.81 on a (1-7) Likert scale measuring their attitude toward recycling paper and cardboard, with a value a (1) indicating a more negative attitude and a value

of (7) indicating a more positive attitude. The mean attitude score of 5.81 indicates that on average employees' attitudes toward recycling are positive. Attitude responses are summarized in Figure 5 below.

Figure 5. Aggregated responses to Attitude Items on Pre-Survey.



Questions eight through thirteen measured the total subjective norm. Questions eight through ten measured respondents' normative beliefs, while questions eleven through thirteen measured their motivation to comply with their normative beliefs. The overall subjective norm score was +22.22. The scale was -63 to 63. A positive score indicates that, overall, the respondent experiences social pressure ***to*** recycle at work, and a negative score indicates they experience pressure ***not to*** recycle at work.

The mean subjective norm score of +22.22 indicates a somewhat weak positive social pressure, meaning employees' recycling behavior is influenced by people around them. As mentioned above, one respondent did not recycle at work; (s)he disagreed with the statement, "I do not recycle...because nobody in my building recycles." Disagreeing with this statement indicates that this individual recognizes that others in the building *do* recycle, yet (s)he is going against what others are doing. This supports that there is an established norm to recycle.

The final four questions, questions fourteen through seventeen, aimed to measure perceived behavior control. The mean score of the four questions was 5.19 on a (1-7) Likert

scale, with (1) being a low level of perceived behavior control and (7) being a high level of control. The mean perceived behavior control score of 5.19 means employees feel in control of their ability to recycle while at work. However, some responses indicated there may be barriers preventing total control over recycling behavior, such as not having enough bins or bins always being full. The individual who did not recycle agreed to the statements, "I do not recycle because there are not enough bins near me," and "I do not recycle because the bins are always full." These responses relate to the barrier or attitude of convenience. Previous studies have found perceived convenience (i.e. lower opportunity cost) influences pro-environmental behavior. Making the targeted behavior (i.e. recycling) as convenient as possible is important to increasing that behavior (Young, 2013).

3.2. Feedback

Table 2. Waste and Recycling Data from Study Building, AgComm.

	Baseline	Feedback	Feedback	Feedback
	Mar 6 – Mar 10	Mar 13 – Mar 17	Mar 20 – Mar 24	Mar 27 – Mar 31
Refuse	80	80	100	80
Paper	20	50	20	20
Cardboard	20	30	20	10
Recycling Rate	33%	50%	29%	27%

No evidence was found that recycling rate feedback and environmental impact feedback was an effective means to increase recycling in the workplace. There were many limitations and variables that may have negatively impacted the effectiveness of the feedback.

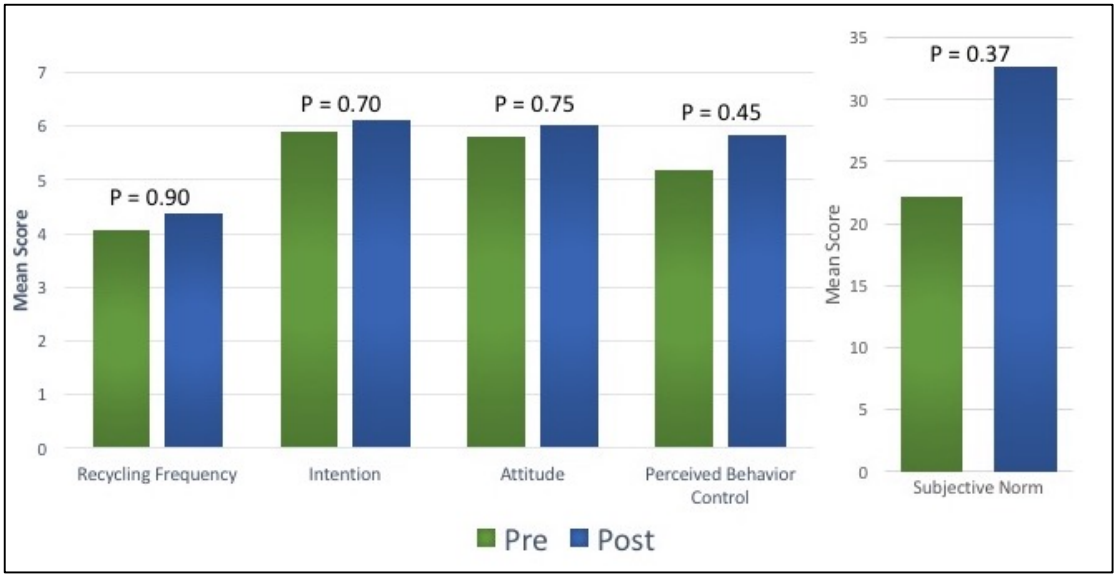
3.3. Post-Survey

The post-survey had a total of seven respondents. A summary of results is in the table and figure below.

Table 3. Summary of Post-Survey Results with P-Value Comparing Results to Pre-Survey.

Variable	N	Min.	Max.	Mean	Std. Deviation	P-value
Frequency of P&C Recycling	7	0	5	4.36	1.15	0.90
Intention	7	1	7	6.10	0.94	0.70
Attitude	7	1	7	6.02	1.32	0.75
Subjective Norm	7	-63	+63	+32.60	1.04	0.37
Perceived Behavior Control	7	1	7	5.82	1.52	0.45

Figure 6. Comparison of Pre- and Post-Survey Means.



While all of the mean scores from the post-survey were slightly higher than the mean scores from the pre-survey, there were no statistically significant findings. Given the small sample size, the lack of significant findings is unsurprising.

4. DISCUSSION

The findings from this study are limited because of the small sample size, but the survey results have initial important implications that could be explored further in additional studies and

surveys. Such implications, if explored further and validated with a larger sample, have the potential to be helpful in designing policy, programs or other interventions at UNL that are conducive to pro-environmental behaviors, like recycling. Such measures will be necessary to accommodate the new landfill ban on cardboard.

The overwhelming majority of respondents in this study indicated that they recycle while at work. This result means that the recycling program is succeeding and suggests there is a norm already established. Furthermore, the one respondent that indicated they did not recycle, disagreed with the statement "I do not recycle because nobody in my building recycles." This further supports the idea that there is an established recycling norm.

While the results indicate that respondents feel social pressure to recycle, it is more uncertain where the pressure is coming from. The results for subjective norms have a degree of ambiguity. I asked both about pressure felt from coworkers and pressure felt from UNL. Results indicate that there was higher positive pressure felt from UNL than from coworkers. The ambiguity lies in how respondents interpreted "UNL". It is possible some participants interpreted it as meaning their boss/superiors and others interpreted it as the overarching organization of UNL. Pinpointing where this pressure is coming from would require a more in-depth survey. Determining if the positive social pressure is strongest from coworkers, leadership (boss), or the organization (UNL) would be helpful in understanding recycling behavior even further.

Attitudes toward recycling are positive. Given that the majority of respondents do recycle, these results suggest that attitude *is* playing a role in motivating recycling behavior, rather than discouraging or impeding recycling. The survey question measuring attitude also reveals that the attitude of recycling being complicated or simple, while still a positive attitude, had the weakest positive attitude compared to the statements that reflected more internal beliefs (i.e. recycling is good/bad or rewarding/unrewarding), rather than external factors. Asking an

additional attitude question about convenience vs. inconvenience could have provided additional insights.

5. CONCLUSION

Increasing recycling rates of paper and cardboard, especially to accommodate new measures like the landfill ban, present a serious challenge. Employee participation in workplace recycling programs is key to increasing commercial recycling levels, however, achieving this participation requires a thorough understanding of employees' motivations for recycling. Research that utilizes modeling, like TPB, can help identify the driving motivational factors behind recycling behavior. Identifying these factors is vital to designing effective policies or programs that aim to increase recycling in the workplace.

The use of TPB with a small sample of participants in a UNL office building has provided valuable insights into the factors that motivate recycling behavior in the workplace. The findings show that employees have a positive attitude toward recycling, they perceive that there is a norm to recycle, they feel social pressure to recycle, and employees feel control over their ability to recycle while at work. Results also suggest that there are some existing barriers to recycling at work, such as not enough bins in convenient enough places. The value of this study is that it can help identify which factors which motivate recycling behavior, thus encourage participation in recycling programs and compliance with recycling policies. This information can also be built upon and then used to develop recycling interventions or programs that encourage recycling and change recycling behaviors for the better.

This study tested to see if providing recycling rate and environmental impact feedback was useful in increasing recycling. No evidence was found to suggest such feedback impacted recycling behavior. However, given that evidence was found that employees feel social pressure

to recycle, future studies could design an intervention that elicits this motivation. One such intervention might be providing normative feedback. Normative feedback is a tool that compares an individual's or groups' performance with a similar individual or group. Studies have found normative feedback to be successful in increasing household recycling behavior (Schultz, 1998). Testing if normative feedback can also be successful in the workplace would be valuable.

REFERENCES

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi:10.1016/0749-5978(91)90020-T

Auringer, M., Bullington, A., Nabizadeh, H., & Tabor, N. (2015). *Investigating the impact of environmental externality feedback on occupant energy consumption behavior and associated savings in commercial buildings*. Term project. University of Nebraska – Lincoln.

Brundtland, G. H. (1987). *Report of the World Commission on environment and development: "Our common future*." New York: United Nations.

Daniels, T. L., & Daniels, K. (2014). *The environmental planning handbook for sustainable communities and regions* (2nd ed.). Chicago, IL: Planners Press.

Engineering Solutions & Design, Inc. (2009). State of Nebraska Waste Characterization Study, prepared for State of Nebraska Department of Environmental Quality. Retrieved from: http://www.deq.state.ne.us/Publica.nsf/1ddd539d20b2b73986256870007b30a8/e3b876e52f86f1a6862575c900733cca/$FILE/Waste%20Study%20Portfolio.pdf

EPA, Office of Resource Conservation and Recovery. (2013). MSW Residential/Commercial Percentage Allocation – Data Availability. Retrieved from: https://www.epa.gov/smm/studies-summary-tables-and-data-related-advancing-sustainable-materials-management-report

EPA. (2015). Advancing sustainable materials management: 2013 fact sheet. Retrieved from https://www.epa.gov/sites/production/files/2015-09/documents/2013_advncng_smm_fs.pdf

Goldsmith, E. B., & Goldsmith, R. E. (2011). Social influence and sustainability in households. *International Journal of Consumer Studies, 35*(2), 117-121. doi:10.1111/j.1470-6431.2010.00965.x

Lincoln City Council. (2017). Minutes from meeting on Monday, January 30, 2017. Retrieved from: http://lincoln.ne.gov/city/council/agenda/history.html

McDonald, S. (2011). Green behavior: Differences in recycling behavior between the 59 home and the workplace. In D. Bartlett (Ed.), *Going Green: The Psychology of Sustainability in the Workplace* (pp. 59-64). British Psychological Society.

McDonald, F. (2014). Developing an integrated conceptual framework of pro-environmental behavior in the workplace through synthesis of the current literature. *Administrative Sciences, 4*(3), 276-303. doi:10.3390/admsci4030276

Oke, A. (2015). Workplace waste recycling behavior: A meta-analytical review. *Sustainability, 7*(6), 7175-7194. doi:10.3390/su7067175

Ruepert, A., Keizer, K., Steg, L., Maricchiolo, F., Carrus, G., Dumitru, A., . . . Moza, D. (2016). Environmental considerations in the organizational context: A pathway to pro-environmental behaviour at work. *Energy Research & Social Science, 17*, 59-70. doi:10.1016/j.erss.2016.04.004

Shrestha, P. (2014). *Comparativestudy of understanding recycling behavior of university students* (Doctoral dissertation). Retrieved from http://digitalcommons.unl.edu/dissertations/AAI3618819/

Staddon, S. C., Cycil, C., Goulden, M., Leygue, C., & Spence, A. (2016). Intervening to change behavior and save energy in the workplace: A systematic review of available evidence. *Energy Research & Social Science, 17*, 30-51. doi:10.1016/j.erss.2016.03.027

Tonglet, M., Phillips, P. S., & Read, A. D. (2004). Using the Theory of Planned Behavior to investigate the determinants of recycling behavior: A case study from Brixworth, UK. *Resources, Conservation and Recycling, 41*(3), 191-214. doi:10.1016/j.resconrec.2003.11.001

Tudor, T., Barr, S., & Gilg, A. (2007). Linking intended behaviour and actions: A case study of healthcare waste management in the Cornwall NHS. *Resources, Conservation and Recycling, 51*(1), 1-23. doi:10.1016/j.resconrec.2006.06.009

University of Nebraska Public Policy Center & Joslyn Institute for Sustainable Communities. (2015). Nebraska Recycling Study. Retrieved from: http://www.lonm.org/attachments/Bulletins/2015/Statewide_Recycling_Study_Final_Report.pdf

Young, W., Davis, M., Mcneill, I. M., Malhotra, B., Russell, S., Unsworth, K., & Clegg, C. W. (2013). Changing behavior: Successful environmental programs in the workplace. *Business Strategy and the Environment, 24*(8), 689-703. doi:10.1002/bse.1836

APPENDIX A

Informed Consent and Survey Questions

INFORMED CONSENT

Workplace Recycling Attitudes and Motivations

As part of an undergraduate thesis project, I am conducting research to explore employee attitudes and motivations related to recycling here at UNL. As a current UNL employee you are invited to participate in this research. In order to participate you must be 19 years of age or older and work in the Agriculture Communications building on UNL East Campus.

Participation requires reading two emails that will be sent to you sometime in the next three weeks and completing two, short online surveys. The two emails will be brief and contain information regarding recycling. The surveys will be the same, just given approximately a month apart. The survey will contain questions regarding your feelings and decisions. Responses will take 5-10 minutes or less. The survey is online and does not require any special skills or knowledge of any program.

Your participation in this research in completely voluntary. You can withdraw from the study at any time. All responses will be completely confidential. If you choose to continue with the survey, you will be asked to provide the last 4-digits or your employee ID number. The sole purpose of this is to connect your answers in the first survey to your answers in the second survey. It will not be used to identify you in any way. The researcher will change the number to a random identifier as soon as the data is collected. Electronic files containing responses will be stored on a password protected computer. Information obtained in this study will be included in a final thesis paper and presentation, but the data will be combined and no one will know what answers you provide.

There are no known risks associated with this research. The information obtained during this study will help in understanding what might encourage (or discourage) employees to participate in recycling programs. In approximately one month's time you will have the opportunity to complete the survey again, at which time you will have the option to provide your contact information and be entered to win a $25 gift card to an area restaurant. Your contact information will not be associated with your survey answers in any way. The winner will be chosen one week after the second survey link is sent. I will randomly draw the winner and notify the winner via email.

If you have questions about the study, please feel free to contact the investigator (Erika Roan, 402-270-4216 or erikaroan05@gmail.com) or my faculty advisor (Dr. Prabhakar Shrestha, 402-472-1126 or pshrestha3@unl.edu). If you have any questions concerning your rights as a research participant that haven't been answered by the investigator or if you wish to report concerns about the study, contact the UNL Institutional Review Board at 402-472-6965.

If you are 19 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the first survey.

A Study of Workplace Recycling Attitudes & Motivations

Note: For the purposes of this survey, "paper" refers to mixed paper such as office paper, newspaper and magazines.

1. Please enter the last 4 digits of your employee ID number. _ _ _ _

   Reminder: This number will not be used to identify you in any way. Its sole purpose is to associate your answers in the first survey to your answers in the second survey. If you do not know the last 4 digits of your employee ID number, please choose a 4-digit number that you can easily remember for the second survey (in approximately one month).

2. Do you recycle at work? ____ Yes (go to Q#3) ____ No (go to Q#4)

3. If the answer to Q#1 is "Yes", how often do you recycle the following materials while at work? Please check all that apply.

Materials	Never	Seldom	About Half the Time	Usually	Always	Don't use this material
Aluminum						
Plastics						
Mixed paper (office, newspaper)						
Cardboard						
Glass						

4. If the answer to Q#1 is "No", please select the answer that best describes you.

I do not recycle because _____	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
My recycling doesn't make a difference					
Recycling takes too much time					
There are not enough recycling bins near me					
I do not know how to recycle					
Recycling bins are always full.					

5. While at work, I expect to recycle paper and cardboard.

   Strongly disagree 1 2 3 4 5 6 7 Strongly agree

6. While at work, I want to recycle paper and cardboard.

   Strongly disagree 1 2 3 4 5 6 7 Strongly agree

7. While at work, I intend to recycle paper and cardboard.

   Strongly disagree 1 2 3 4 5 6 7 Strongly agree

8. Recycling paper and cardboard is:

Good	1	2	3	4	5	6	7	Bad
Worthless	1	2	3	4	5	6	7	Useful
Not Responsible	1	2	3	4	5	6	7	Responsible
Rewarding	1	2	3	4	5	6	7	Not Rewarding
Environmentally Friendly	1	2	3	4	5	6	7	Not Environmentally Friendly
Too Complicated	1	2	3	4	5	6	7	Simple

9. My coworkers think that I

should not 1 2 3 4 5 6 7 should recycle paper and cardboard.

10. My coworkers

do not 1 2 3 4 5 6 7 do recycle paper and cardboard.

11. UNL would

disapprove 1 2 3 4 5 6 7 approve of my recycling paper and cardboard.

12. Doing what my coworkers do is important to me

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

13. What UNL thinks I should do is important to me

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

14. My coworkers' approval of my actions is important to me

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

15. Recycling paper and cardboard at work is

Inconvenient 1 2 3 4 5 6 7 Convenient

16. Recycling paper and cardboard at work is

Easy 1 2 3 4 5 6 7 Hard

17. My facility/building provides

Unsatisfactory 1 2 3 4 5 6 7 Satisfactory resources for recycling cardboard and paper

18. I know where to recycle paper and cardboard at work

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

19. I have plenty of opportunities to recycle paper and cardboard at work

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

APPENDIX B

Example of Feedback Flyer sent via Email