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Running Head: INFORMATION AND PROXIMITY EFFECTS ON RECYCLING

The Effects of Information and Container
Proximity on Paper Recycling

Todd Carlisle
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Abstract

Contrary to popular belief, paper products are the one material that has actually increased (in percent of total waste) in U.S. landfills in the past 25 years (Rathje, Hughes, Archer, Wilson & Casselles, 1989). While paper recycling programs have become more commonplace today, their effectiveness has plateaued. To better understand how to increase a person's recycling behavior, this experiment, using a multiple baseline design, measured the effects of (1) information and (2) recycling container proximity on the paper recycling levels of 152 undergraduate students. The results of the experiment suggest that increasing a recycling container's proximity and educating a person about recycling can influence a person's level of paper recycling.

The Effects of Information and Container
Proximity on Paper Recycling

In the current information age, the tools for data entry are changing from pen and paper to keyboard and hard drive. This move would appear to give environmentalists hope. More bytes and less paper would seem to be a trend that could help save many trees. However, this electronic conservation effect is not replacing the need for paper documentation fast enough. Our wasteful ways remain almost unchanged and the devastating effects on the environment continue. According to the U.S. Environmental Protection Agency, Americans generate over 750 million tons of solid waste, approximately 3 tons per citizen each year (Environmental Protection Agency, 1996). Additionally, 95% of this waste is deposited into our landfills (Environmental Protection Agency, 1996). This vast amount of waste is rapidly closing the already very limited number of viable landfills in the U.S. The number of available landfills has dropped from 18,000 in 1979 to just 6,500 in 1990 (Communicolor, 1995).

Contrary to popular belief, paper products are the only materials that have actually increased (in percent of total waste) in our landfills over the past 25 years (Rathje, et al., 1989). Paper and paperboard collectively make up 62.2% of all materials found in landfills (Eco Web, 1996). Recycling efforts are now considered the most encouraging solution to the decreasing number of landfills available.

The effects of increased recycling are dramatic; 80% of the total weight of de-inked waste paper will yield usable material for making recycled paper (Communicolor, 1995). Recycling paper has far-reaching effects beyond the immediate goal of decreasing the rate our landfills are closing. For every ton of recycled paper that is made instead of virgin paper, 7000 gallons of water are saved, 17 trees remain standing, and 60 pounds of pollution are not emitted into the atmosphere (Communicolor, 1995).

The success of paper recycling programs is crucial as the world's population drains our natural resources. Municipal and office recycling programs are now starting to become the norm, rather than the exception. Although the number of these programs continues to grow, the efficiencies of most of them remain rather stable. The percent of total waste that we recycle has plateaued. The focus of the "Green" movement has now become one of increasing recycling efficiency. That is, how do we get people to consistently recycle more of their waste?

An apparently obvious method to encourage recycling behaviors would be to simply reward them. Lotteries and small payment awards that have been used in mobile home communities, universities, and residential neighborhoods have indeed been found to increase recycling behaviors (Diamond & Loewy, 1991; Luyben & Bailey, 1979). However, both of these studies found that attitudes toward recycling were not affected by reward/lottery conditions and that recycling levels returned

to baseline rates when external reinforcers were discontinued. In addition to long term recycling maintenance problems, reward and payment reinforcers for recycling programs are simply not economical.¹

A relatively simple and cost effective method of improving recycling behaviors involves increasing a consumer's proximity to a recycling container. The closer a person is to a recycling container, the more likely that person is to recycle. This effect has been found by Luyben and Bailey (1979) in mobile home parks, by Reid, Luyben, Rawers and Bailey (1976) in apartment buildings, and by Witmer and Geller (1976) in college dormitories. Brothers, Krantz, and McClannahan (1994) were even able to increase the percent of paper recycled in an office setting from 28% to 98% by providing individual (instead of centrally located) recycling containers.

It is possible, however, that increasing the proximity of recycling containers alone will only assist those who already are knowledgeable about recycling and currently are recycling. An important aspect of increasing a person's recycling behavior is the matter of increasing that person's knowledge of the concept of recycling. Jacobs, Bailey, and Crews (1984), in their experiments with municipal recycling programs, found that informational brochures increased participation 2 to 4 times over simple advertisements. Most findings concerning the effect of information on recycling specify that specific knowledge of recycling (i.e., where someone can go to recycle, what can

be recycled, etc.) is a strong predictor of levels of recycling (Brothers et al., 1994; Schultz, Oskamp & Mainieri, 1995; Vining & Ebreo, 1990). However, general environmental knowledge is not always an accurate predictor of who will recycle (Maloney, Ward & Braucht, 1975; Oskamp, Harrington, Edwards, Sherwood, Okuda, & Swanson, 1991). The area where this research requires study concerns the process of supplying a continuous flow of information about recycling to consumers, rather than a single informational pamphlet or memo. There are no studies, as of the time of this study, that examine the effects of a continuous flow of information.

Thus, it appears that two areas of recycling research offer possibilities for increasing recycling behaviors: proximity and information. The present experiment is designed to further measure the effectiveness of these variables. The first (or "proximity") hypothesis of this experiment is that a person will recycle more if an individual recycling container is available near by for use as opposed to a group recycling container located farther away (as found by Brothers et al., 1994). The second (or "information") hypothesis under study is that a continuous supply of information on paper recycling will elicit an increase in recycling behaviors from participants. The third (or "combination") hypothesis tested whether receiving both an individual recycling container and a continuous supply of information would result in greater recycling than receipt of only one of the two implementations.

The present experiment works under the assumption that to improve recycling levels, it is beneficial to motivate a person internally by increasing their knowledge of recycling as well as externally by increasing their proximity to recycling containers. This idea of increasing the strength of recycling behavior through a combination of information and increased proximity, although never studied using continuous information, has received some support (Luyben & Bailey, 1979; Reid et al., 1976).

Methods

Participants

There were 152 female undergraduate students, on six floors of a residence hall, who participated in the experiment. Because of the physical layout of different residence hall floors on campus, group recycling containers could only be placed on floors of one residence hall.² Only female participants were used because Oskamp et al. (1994) found, in a comprehensive review of recycling studies, that women tend to recycle significantly more than men. To control for this confounding variable, an all female residence hall was chosen for the experiment.

Procedure

Meetings for all students on each of the dormitory floors selected for testing were held before the experiment began. At these meetings, students were told that the experimenter, in conjunction with the university's environmental club, would be testing a new form of the campus paper recycling program.

Students were then asked for their participation and an informed consent form was passed out and collected (See Appendix A).

A multiple baseline procedure, to be described below, was implemented across the six dormitory floors. Before baseline data were collected, each of the hallways was given one group paper recycling container which would remain in place throughout the experiment. The group recycling containers were blue, plastic, square-shaped and had a 44 gallon capacity. For the first two weeks of the experiment, the levels of paper in these bins were measured weekly and recorded as baseline recycling rates. A digital scale, capable of measuring the paper to the nearest half of a pound, was used to weigh all paper bins.

All of the paper measurements were taken by an experimenter and a member of the campus environmental group. The member of the environmental group was blind as to which experimental group was being measured to ensure inter-rater reliability and control for researcher bias. There was a 98% inter-rater reliability score overall, with only one measurement differing between raters by 0.5 pounds.

When the individual container condition was implemented on a dormitory floor, each dormitory room (whether a single or double occupancy room) received one individual recycling container which was 16 inches long, 11 inches wide, 6 inches high, had a snap-lock lid and was made of semi-transparent plastic. All participants on a floor received these containers

at the same time. During the floor meeting that all participants attended, it was explained that all individual recycling containers should be put outside each participant's room by 8 p.m. on Sunday nights to be emptied. At each collection time, the individual recycling containers were dumped into the group container and weighed. Thus, each floor had its group paper recycling rate measured once a week.

Four of the six dormitory floors were randomly chosen to receive individual recycling containers. Two of these four floors and one additional floor (which did not receive individual containers) were randomly selected to receive information for the recycling information condition. Participants selected for the information condition received one brief sheet of information concerning paper recycling in general (printed on recycled paper) once a week for the entire experimental condition (all information sheets are shown in Appendix B). While the message of these sheets changed for each issue, the format remained the same. Two recycling facts were presented in the first section. The second section gave information on local recycling procedures. A recycling tip was suggested in the third section. And finally, in the fourth section, phone numbers or Internet addresses were given for students to find out more information about recycling. The intent of these sheets was to build a better recycling knowledge base.

One of the six dormitory halls acted as a control condition, receiving neither individual recycling containers nor information sheets. Only the group containers on this floor were measured.

The testing was 8 weeks in duration with each of the five floors receiving individual containers and/or informational sheets during different weeks. The second floor received information starting after the second week. The third floor received information starting after the fourth week and individual containers after the sixth week. The fourth floor was the control. The fifth floor received information after the second week and individual containers after the fourth week. The sixth floor received individual containers after the second week. Finally, the seventh floor received individual containers after the fourth week.

At the end of the experiment, all participants were debriefed as to the purpose of the experiment and given the phone number of the research advisor to call in case of questions (see Appendix C).

Results

Of the 155 residents living on the 6 floors of the residence hall that was used, 152 residents agreed to participate in the experiment. Participants were evenly spread across halls, with 25 participants on each of 4 different floors and 26 participants on each of 2 different floors. Throughout the 8 week study, there was a zero percent attrition rate.

The overall levels of recycling can be seen in Figure 1. Baseline data was taken for 2 weeks across all conditions. Then, during the next 4 weeks, information and individual container implementations were begun at staggered times indicated on Figure 1.

Overall, the proximity hypothesis was supported. There was a one week increase of 107.1% in recycling for the two groups who received only the individual containers (see Figure 1 and Table 1). When the two weeks before and after the implementation of containers are compared, these two "container only" halls still maintained a 101.2% increase in recycling (see Figure 1 and Table 2). When all four groups who received individual containers are taken together, a paired-samples t-test reveals that the increase in paper recycling for the week immediately after implementation of the containers is statistically significant $t(3) = 7.42$, $p = .005$. Further, for these same four groups, the average level of recycling for all the weeks after the implementation of the individual recycling containers was significantly higher than the average level of recycling for all weeks prior to the introduction of the individual containers ($M = 5.76$, $SD = 2.39$), $t(3) = 4.82$, $p = .017$.

The information hypothesis was supported, but to a lesser degree than the proximity hypothesis. There was an immediate 71.9% increase in recycling for the three groups who received information the week after the information was introduced (see Figure 1 and Table 1). This increase however, was not

statistically significant $t(2) = 1.72$, $p = .227$. When the two weeks before and after the introduction of the information is compared, the three halls that received information show a 62.3% increase (see Figure 1 and Table 2). Interestingly enough, this two week increase is significant $t(2) = 7.95$, $p = .015$, perhaps because of a smaller standard deviation.

The two groups who received both information and individual recycling containers supported the combination hypothesis. When we look at the week before information was introduced and the week after the individual containers were implemented, we see that these two combination groups increased 194.4%, almost twice the increase found from the "container only" groups (see Table 1). When we compare the recycling rates from two weeks before the introduction of information to two weeks after the introduction of individual containers, we still find a 119.3% increase. Again, this is greater than either the "informational only" and "container only" group increases.

The control condition remained relatively stable throughout the experiment with the exception of one extremely high, unaccountable week of recycling. It should be noted that the recycling rate for the control group returned to normal levels after this abnormally high week.

All of the conditions experienced their peak levels of recycling rates during the week directly after their only or final implementation (see Figure 1). A gradual drop in recycling can be found in some of the conditions after this peak rate.

However, when we compare the peak recycling rates of the two "container only" groups and the combination group which began information at week 2 with their respective recycling rates 3 weeks later, we find that this drop is not statistically significant ($\underline{M}(\text{peak}) = 13.00$, $\underline{SD}(\text{peak}) = 3.12$, $\underline{M}(3 \text{ weeks post peak}) = 9.17$, $\underline{SD}(3 \text{ weeks post peak}) = 0.29$, $\underline{t}(2) = 2.34$, $\underline{p} = .145$).

Discussion

The emergence of recycling programs in the latter half of the 20th century has brought new hope to the environmental movement. However, the effectiveness of this new technology lies in the hands of the general population, which is often dictated by a certain laziness and lack of knowledge. Considering these general weaknesses, this experiment sought to increase paper recycling rates by influencing participants in a relatively passive fashion. We hypothesized that if we increased recycling container proximity and educated participants about recycling, we could increase recycling rates.

Support for the proximity hypothesis was strong overall. Recycling rates increased by over 100% when individual containers were available for use by participants. This effect seems to support a relatively simple solution to recycling efficacy problems: simply add more recycling receptacles and people will be more inclined to recycle than discard their waste.

Support for the information hypothesis was not as evident as that of the proximity hypothesis. While increases were found

in the information conditions, these increases were not nearly as dramatic as results in accounted for by increased proximity. Recycling rates from the "information only" condition were particularly poor. There are a number of possible explanations for these unsatisfactory results. Information sheets were only distributed once a week and in written form. As many dormitory students can attest, these types of mass mailings are very easy to discard without much thought. Additional research should use alternate forms of information such as E-mail, oral presentations, or short seminars. Another possible explanation for the below average effects would be that many of the participants already were aware of the processes and benefits of recycling. The informational sheets may have been redundant for these participants. However, it should not be assumed that everyone is aware of the purposes of recycling.

Of the three hypotheses, perhaps the strongest support was shown for the combination of information and individual containers. Of the six conditions, the two floors who received both information and individual containers ended the experiment recycling with the highest rates of recycling. Increases one and two weeks after the final implementations for these groups were also greater than for "information only" and "container only" groups. These findings suggest that while information alone produces only limited increases, the added availability of containers lets people act on their new found knowledge. One limitation of the present experimental design was that the

implementation of the informational sheets always came before the introduction of individual containers. To better understand the interaction of information and proximity, future research should increase proximity and then start recycling education.

There are a number of additional limitations of the present study which should be addressed. To begin with, participants made up a very homogeneous population: female, between 18-22 years old, with similar socio-economic status, and all living in the same residential unit. Because of this unrepresentative subject pool, it would appear to be easier to generalize to women recyclers rather than all recyclers.

The nature of the measurements made for very limited statistical interpretation. Because the real "subjects" of the experiment were groups of individuals acting as a unit, the actions of individuals were not able to be analyzed, and thus predictive power is limited by a small "n." Additional work should look at the behaviors of people acting as individual recyclers.

As is true of many studies on recycling, our study is also limited because it simply measures the amount of paper recycled without measuring contamination. It would have been ideal to measure the amount of contaminants (i.e. non-recyclables) in the paper that was recycled. It would have also been helpful to have data indicating the amount of trash that was discarded during the experimental period. This would

have allowed us to observe if recycling simply followed the overall trends of trash flow.

Our experiment was also limited by time constraints. Ideally, permanent changes in behavior would be shown through continued and long term increases in recycling. The true effects of the implementations are not effectively realized in an 8 week experiment. The dormitory setting is not a perfect environment for measuring long term effects since many residents relocate after as little as 4 months.

One final limitation that needs to be addressed is the possible occurrence of the Hawthorne Effect. From the initial floor meeting that was held all participants were aware that their recycling behaviors were being monitored under a new "recycling program." It is quite possible that recycling was increased simply because a change in the normal recycling program was initiated.

As recycling programs become more commercialized and profit oriented, new ways of motivating recyclers will be sought out. The present experiment has attempted to show that through a simple educational program and an increase in container proximity, greater levels of recycling may be obtained from consumers. Hopefully the information in studies such as the present experiment may be utilized by municipal, commercial, and non-profit recycling programs to help control the increasing solid waste problem that has accompanied our entrance into the 21st century.

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Author Note

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Footnotes

1. Cost is a major factor for successful recycling programs because the market for recyclable materials is very unstable and overhead costs are high.

2. The custodial staff of Illinois Wesleyan University informed me that the only residence hall where I could place group recycling containers and not cause a fire hazard was Ferguson. So that was the residence hall that I used.

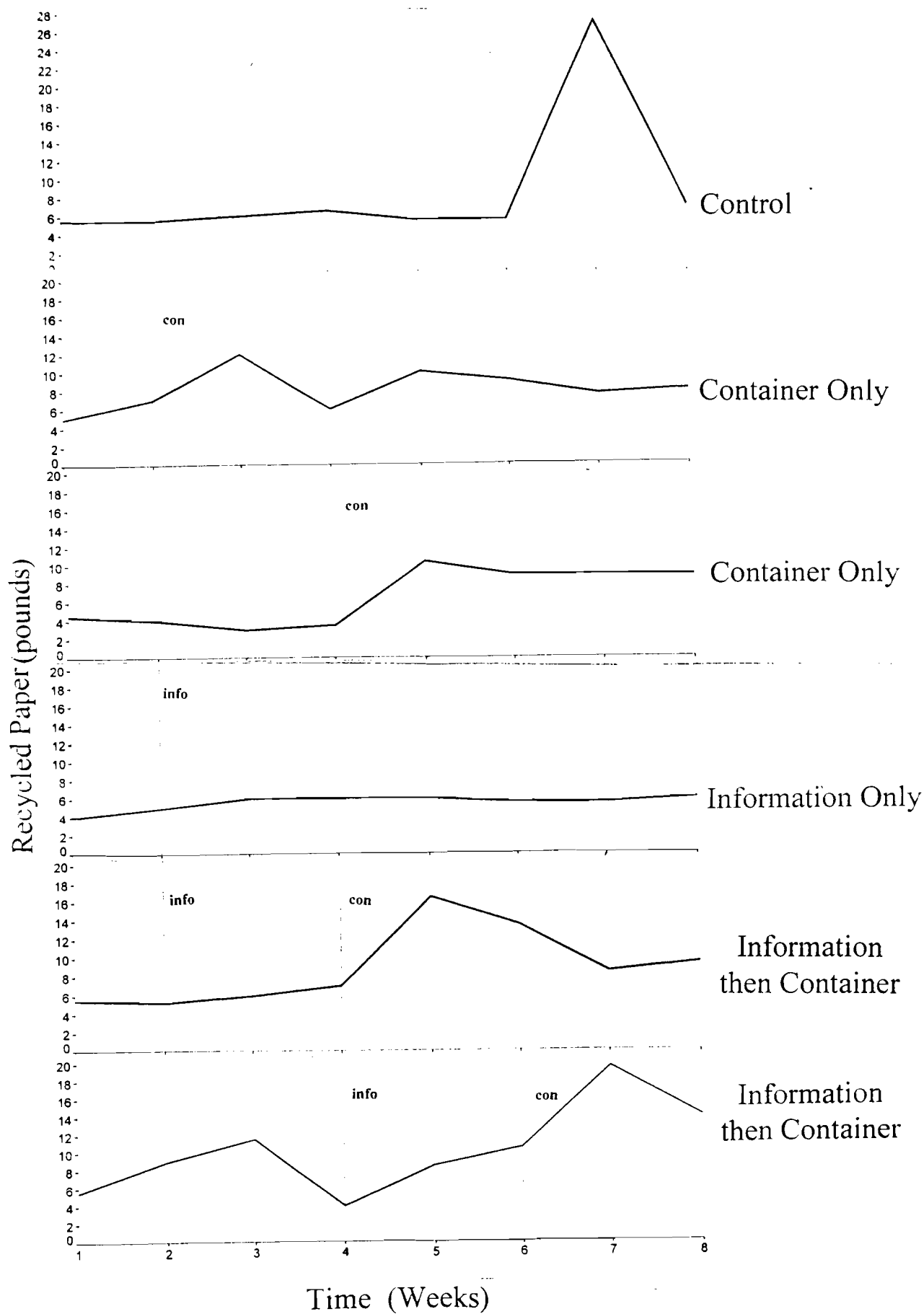


Figure 1: The levels of paper recycling for each of the 6 groups for the entire 8 weeks are shown. The reference lines on the graphs represent the weeks when interventions were started. The "info" label indicates the start of information intervention and the "con" label refers to the start of the individual container intervention.

Table 1

Changes in Recycling Levels Between the Week of and the Week Directly After Intervention

	Week of Intervention (Mean weight in pounds (SD))	One Week After Intervention (Mean weight in pounds (SD))	Percent Increase
Information Only (3 groups)	4.75 (0.66)	6.83 (1.44)	71.9%
Container Only (2 groups)	7.00 (2.86)	14.63 (4.13)	107.1%
Information and Container (2 groups)	4.63 (0.88)	18.00 (2.12)	194.4%

Table 2

Changes in Recycling Levels From Two Weeks Before and Two Weeks After Implementation

	Two Weeks Pre-Intervention (Mean weight in pounds (SD))	Two Weeks Post-Intervention (Mean weight in pounds (SD))	Percent Increase
Information Only (3 groups)	5.88 (1.68)	7.33 (1.89)	62.3%
Container Only (2 groups)	4.63 (1.95)	9.38 (0.53)	101.2%
Information and Container (2 groups)	6.57 (1.67)	15.86 (1.24)	119.3%

Appendix A
Informed Consent Form

Dear Student:

You are being asked to participate in a study on the Illinois Wesleyan University campus that involves improving the current paper recycling program. This study, conducted in conjunction with the Environmental Concerns Organization on campus, will examine the relationship between information and recycling container proximity on paper recycling behaviors.

If you choose to participate in this study, which will run from approximately February 9, 1997 to April 13, 1997, you may receive a small individual paper recycling bin to place inside your room. On every Sunday night (at approximately 10:00 pm) of the experimental period, one of the experimenters will stop by your room to pick up your recycled paper. If you know that you will not be in your room on Sunday night, we ask that you place your recycling container outside your room to be emptied. All paper will be placed together in a bag and will not be sorted through in any way to ensure confidentiality of your paper documents. Once weighed, your recycled paper will be picked up by workers from the Physical Plant with the rest of campus paper. Some students will also receive brief informational sheets in the mail that explain some of the benefits of recycling.

A number of hallways in Ferguson are being asked to participate in this study. Participation is completely voluntary. Those that do not participate will not be punished in any way. If you do choose to participate in this study, you may withdraw from the study at any time, without penalty.

Remember, you will be participating as a member of your dorm floor, not an individual. This means that we will not be keeping track of any one person's paper.

If you understand these conditions and would like to participate in this study, we ask that you sign the bottom of this form and return it to the Principle Investigator. If you have any questions before, during, or after the study, you may contact the following individuals:

Todd Carlisle, Principle Investigator: 829-7521 or

tcarlisl@sun.iwu.edu

Dr. Linda Kunce, Project Supervisor: 556-3663 or

lkunce@titan.iwu.edu

Dr. Johnna Shapiro, Institutional Review Board member: 556-3164

or jshaprio@titan.iwu.edu

Please choose **one** of the following options:

_____ I have read the above conditions and I would like to participate in the paper recycling study as outlined above.

_____ I have read the above conditions and I would NOT like to participate in the paper recycling study as outlined above.

Please sign your name: _____ Date _____

Please print your name: _____ Date _____

Appendix B

The Full Supply of Information Distributed to Participants
Information Sheet 1

From the IWU/ECO Recycling Project

Recycling Facts:

*If every American recycled just one-tenth of their newspapers, we would save about 25 million trees a year.

*The junk mail Americans receive in one day could produce enough energy to heat 250,000 homes.

Local Recycling:

The reason that IWU has stopped recycling newspaper, magazines, and phonebooks is because these items have ceased to be profitable for the company that collects all of IWU recyclables. If the market for these items picks up, we will be able to recycle these materials again.

Recycling Tip:

Use old newspapers instead of paper towels to clean mirrors and TV screens.

For More Recycling Info:

Contact: Operation Recycle (one of Bloomington/Normal's first recycling agencies) at 829-0691

Information Sheet 2

From the IWU/ECO Recycling Project

Recycling Facts:

*Today we currently recycle 45 million tons of materials. This is 22% of our waste.

*Every day, U.S. paper makers recycle enough paper to fill a 15 mile long train of boxcars.

Local Recycling:

*Recycled paper is available for your xeroxing needs through the campus Printing Services. It costs only 4¢ a sheet, cheaper than the library.

Recycling Tip:

*Use back sides of old notes or returned assignments to take down phone messages instead of Post-It notes.

For More Recycling Info:

*To discuss IWU's current recycling program, you should contact Emily Cromwell, the campus recycling coordinator, at 556-2333.

Information Sheet 3

From the IWU/ECO Recycling Project

Recycling Facts:

*Every year, Americans throw away enough office and writing paper to build a wall 12 feet high, stretching from Los Angeles to New York City.

*It takes 75,000 trees every week to produce the Sunday edition of the New York Times.

Local Recycling:

*IWU recycling was improved drastically after E.C.O. provided the administration with data from a "dumpster dive" showing how much recyclable material students were throwing away.

Recycling Tip:

*All it takes to make recycled paper yourself is used newspaper, water, a blender, and a piece of old wire screen.

For More Recycling Info:

*Call the Ecology Action Center (454-3169) to find out how you can make your own recycled paper with these simple ingredients.

Information Sheet 4

FROM THE IWU/ECO RECYCLING PROJECT

Recycling Facts:

*Producing recycled paper uses 60% less water and 40% less energy than producing paper from wood pulp. Additionally, air pollution is cut by 74% and water pollution is cut by 35%.

Local Recycling:

*To help encourage post consumer recycling on campus, ask your professors to print tests and assignments on recycled paper.

Recycling Tip:

*Shred your old paper and use it as protective packing when shipping fragile items.

For More Recycling Info:

*Visit: <http://www.wrfound.org.uk/Paper-IS.html> for extensive information on paper recycling.

Information Sheet 5

FROM THE IWU/ECO RECYCLING PROJECT

Recycling Facts:

*The U.S. uses more paper per person than any other country in the world (20% more than the second highest country, Finland).

*Worldwide, we have the capacity to recycle more than 50% of the current paper supply that is now being discarded.

Local Recycling:

*Remember that wet paper or newspaper is not able to be recycled until it is dried out completely.

Recycling Tip:

*Try sharing newspaper and magazine subscriptions with other people on your floor to save paper.

For More Recycling Info:

*Visit

<http://www.foe.co.uk/pubsinfo/info...essrel/current/19960105153016.html> to learn how recycling helps reduce ozone depletion.

Information Sheet 6

FROM THE IWU/ECO RECYCLING PROJECT

Recycling Facts:

*Paper can be recycled four times before it is unusable

*For every dollar we spend buying things, 10 cents goes for packaging that we throw away.

Local Recycling:

*Don't crumble up paper when you recycle it. This takes up more space in containers.

Recycling Tip:

*Don't throw that Easter basket away! Try using it to plant flowers in.

For More Recycling Info:

*Visit <http://www.geocities.com/RainForest/5002/index.html> to learn how to reuse some materials you would normally throw away (like Easter baskets)

Information Sheet 7

FROM THE IWU/ECO RECYCLING PROJECT

Recycling Facts:

*The most pollution that is created from making paper comes from the bleach that is used to whiten the paper.

Local Recycling:

*The current problem Bloomington/Normal is experiencing with a poor market for recycled paper is similar to one found throughout the U.S.

Recycling Tip:

*Don't throw magazines away! Try selling them back to second hand bookstores or donating them to school libraries.

For More Recycling Info:

*Visit <http://www.raymond.com/recycle/> to learn about current legislation concerning recycling.

Debriefing Letter

April 17, 1997

To: All students involved in the ECO/IWU recycling project

Concerning: The end of the project

This letter is to inform you of the end the testing of the "experimental recycling program." The program that we were trying was part of a thesis project that was studying the effects of information and recycling container proximity on levels of paper recycling. The halls of Ferguson were used for this project. Some floors were given informational sheets, some floors were given individual recycling containers, some floors were given both information and individual containers, and one floor was given neither. Our hypotheses were that 1)students given informational sheets would recycle more than students who received no sheets 2)students who had individual recycling bins would recycle more than those only able to use a group bin and 3)students who received both information and individual containers would recycle more than students who received only one of the two implementations.

Your floor's level of recycling was measured each week for 12 weeks. All three of our hypotheses were supported.

However, our study is now over and now students who received individual recycling bins are must go back to only using the group paper recycling bin. You may still collect paper in your

plastic containers, however, ollection of individual bins will no longer continue on Sunday evenings.

Students who received individual containers may keep them for whatever use they wish. If you do not wish to keep your container, please drop it off at the Ferguson front desk on Saturday, April 19th before 5 pm.

We very much appreciate everyone's help in this project. The information obtained from this study will be given to Debra Woods, the current Recycling Coordinator, and members of the Physical Plant in an effort to improve the current recycling program on campus.

If you have any questions or concerns regarding this project, please direct them to Dr. Linda Kunce at 556-3663 or lkunce@titan.iwu.edu

Sincerely,

Todd Carlisle and Linda Kunce, Ph.D.

Survey Code # _____
If you would like to participate in future studies, please write the code number from the cover page in the space above; if not, please leave it blank.

Today's Date _____

Background Information

Please complete this information sheet. We are asking these questions so that we can describe the group of people participating in the study. Skip any questions that you cannot answer or feel uncomfortable answering.

Information about you and your family:

1. Your gender
☐ male ☐ female
2. Relationship to child with autism
☐ Birth parent ☐ Adoptive parent ☐ Step parent ☐ Other (please describe) _____
3. Marital Status
☐ Single ☐ Living with someone ☐ Married ☐ Divorced ☐ Widowed
4. Your age _____
5. Your education in number of years completed _____
6. Your occupation _____
7. Your spouse/partner's age _____
8. Your spouse/partner's education in number of years completed _____
9. Spouse/Partner's occupation _____
10. Approximate gross family income _____
11. In what state/country do you live? _____

Information about your child with autism:

1. Date of birth (month/year)____/____
2. Gender of child
☐ male ☐ female
3. Child's race/ethnicity_____
4. What is your child's primary diagnosis?
☐ Autism ☐ High Functioning Autism ☐ Asperger's Disorder ☐ PDD-NOS/Atypical Autism
☐ Other_____
5. Please list any additional diagnoses/handicapping conditions _____

6. At what age did your child receive a formal diagnosis of Autism/HFA/Asperger's/PDD?_____
7. Where was this formal diagnosis made?_____
8. What type of facility is this?
☐ Clinic specializing in developmental disabilities ☐ University based clinic
☐ Hospital based clinic ☐ Family physician/local doctor
☐ Developmental Evaluation Center ☐ School
☐ Other_____
9. How does your child communicate?
☐ Mostly through language/talking ☐ Mostly through sign language
☐ Mostly through writing or typing (non facilitated) ☐ Mostly through pictures
☐ Mostly through gestures ☐ Other_____
10. Educational Placement
If applicable, in what academic grade is your child?_____
What type of classroom (i.e.,regular, special education, mixed)_____
What percentage of the child's week is spent in regular classes?_____
11. Does your child receive Sensory Integration Therapy?
☐ Yes ☐ No

For research purposes, we would like the most accurate report you can provide of your child's cognitive functioning. We understand the results of intelligence testing may not fully depict your child's ability, but this data is necessary for comparison with previous published studies. You may need to refer to a copy of the results of the most recent intelligence test.

12. Cognitive Functioning

*Date of most recent intelligence test (month/year) ____ / ____

*Test used:

- ☐ Bayley Scales of Infant Development
- ☐ Kaufman Assessment Battery for Children (K-ABC)
- ☐ Leiter International Performance Scale
- ☐ McCarthy Scales of Children's Abilities
- ☐ Merrill - Palmer Scale
- ☐ Stanford - Binet Intelligence Scale
- ☐ Wechsler Intelligence Scale (Please indicate which version was used)
 - ☐ For Preschool (WPPSI-R)
 - ☐ For Children (WISC-R)
 - ☐ For Adults (WAIS-R)
- ☐ Other _____

*What was the overall estimate of your child's intelligence(i.e., full scale IQ)? _____
If applicable, what was the Verbal score? _____
Performance score? _____

13. Regardless of testing information, at what overall level do you think your child functions?

- ☐ Significantly above age level
- ☐ Above age level
- ☐ At age level
- ☐ Below age level
- ☐ Significantly below age level

How much unevenness or scatter is there among your child's different skills and abilities?

- ☐ A Lot
- ☐ Some
- ☐ None

Behavioral Development

Instructions:

The groups of items presented below are designed to give us an idea of a child's behavior in typical, day-to-day situations. For each group of items, please take the time to give us two types of information.

First, for each group, rate how well each item describes the way your child behaves in everyday activities. Use the scale below:

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Second, for each group, select the one item that best describes your child. For instance, if you thought item #1 in Group 1 was the most descriptive of the way your child behaves, you would put a "1" at the end of that group of questions.

Note that some of the groups of questions might seem somewhat redundant. Please answer all of the questions even if have already answered similar questions earlier in the questionnaire.

Group #1

Again, please rate each item according to the scale above. Then, at the end of this group of items, please choose the one item that best describes your child.

Rating:

1. ____ When my child is with unfamiliar adults or children, (s)he does not start interactions, but (s)he will interact with others if they pull him/her into activities. (S)he will play with others as long as others direct play but will wander off at the end of a game unless redirected by the other people.
2. ____ When my child is with unfamiliar adults or children, (s)he readily approaches others to interact and responds easily to others. His/her manners of interacting is generally appropriate (not awkward or unusual).
3. ____ When my child is with unfamiliar adults or children, (s)he either fails to respond when others approach or turns or walks away from others. (S)he only approaches other people to obtain something that (s)he needs or to play physical games (for example, roughhousing or tickling); otherwise, (s)he does not approach others to interact.
4. ____ When my child is with unfamiliar adults or children, (s)he does approach others to interact but is awkward or unusual in his/her manner of doing so. (S)he is not able to change his/her speech or behavior to adapt to others and continues to pursue his/her own topics or favorite activities, even in the face of active discouragement.

____ Which of the items in the group above best describes your child?

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Group #2

1. ____ My child does not have difficulty imitating others' actions and creatively engages in make-believe play in an appropriate manner.
2. ____ My child mimics the actions of others, but (s)he does so without real understanding. (S)he mimics other children who are using creative make-believe play but does not create his/her own make-believe play.
3. ____ My child does not mimic others' actions (i.e., does not imitate facial expressions or simple motions) and does not engage in pretend play.
4. ____ My child does not have difficulty imitating other people. (S)he creates his/her own make-believe play, but this make-believe play lacks real variation or feeling (for example, (s)he may pretend that a block is a cookie, but repeats this behavior without changing it or without showing any real feeling).

____ Which item above best describes your child?

Group #3

1. ____ My child does approach unfamiliar adults or children, but (s)he approaches them in an unusual, awkward, naive, one-sided, or repetitive manner. For instance, (s)he might talk repeatedly about a particular topic of interest to him/her, regardless of whether the other person is interested.
2. ____ My child does not spontaneously approach unfamiliar adults or children to interact.
3. ____ When my child is with unfamiliar adults or children, (s)he readily approaches others to interact. His/her manner of interacting is generally appropriate (not awkward or unusual).

____ Which item above best describes your child?

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Group #4

1. ____ If an unfamiliar person walks up to my child in a social situation, the child readily responds to the person. His/her manner of interacting is generally appropriate (not awkward or unusual).
2. ____ If an unfamiliar person walks up to my child in a social situation, the child will interact with the other person. However, (s)he shows no initiative and only responds to the questions and comments of the other person; if the other person stops structuring the interaction, the child will lose interest.
3. ____ If an unfamiliar person walks up to my child in a social situation, the child will interact with the other person. However, (s)he uses the approach of the other person to indulge in his/her own interests, regardless of whether or not the other person shares those interests.
4. ____ If an unfamiliar person walks up to my child in a social situation, the child seems unaware of this other person or turns and walks away.

____ Which item above best describes your child?

Group #5

1. ____ My child's communication skills are not impaired at all.
2. ____ My child can only respond to simple questions and commands, and these responses can be understood by people who do not know my child well.
3. ____ My child has a good vocabulary and can use complete sentences. However, (s)he shows subtle problems with communication, such as repetitive speech, low awareness of other people's responses, and poor turn-taking abilities in conversation.
4. ____ My child does not use spoken language or is only capable of repeating things (s)he has heard.

____ Which item above best describes your child?

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Group #6

1. ____ When my child is with unfamiliar adults or children, (s)he will respond readily but inappropriately when others attempt to communicate with him/her (for example, (s)he will talk at length on a topic that is of particular interest to him/her regardless of whether it is of interest to the other person, ask questions in an incessant, even pestering manner, or respond in some other awkward or unusual manner).
2. ____ When my child is with unfamiliar adults or children, (s)he will respond when others attempt to communicate with him/her, but only as long as the other person structures or leads the conversation. (S)he will not start the conversation or ask questions.
3. ____ When my child is with unfamiliar adults or children, (s)he responds readily when others attempt to communicate with him/her. His/her manner of communicating is generally appropriate (not awkward or unusual).
4. ____ When my child is with unfamiliar adults or children, (s)he does not respond when others speak or gesture to him/her.

____ Which item above best describes your child?

Group #7

1. ____ My child only uses words and gestures to get things that (s)he needs (for example, juice, go to the bathroom, etc.), not to interact socially with another person.
2. ____ My child spontaneously communicates with others, and his/her manner of communicating is appropriate (not awkward or unusual).
3. ____ My child spontaneously communicate with others. However, when (s)he communicates his/her language is centered around a narrow range of topics and has a one-sided, awkward or unusual manner.
4. ____ My child does not spontaneously initiate communication with others, but (s)he will communicate with others if someone else initiates it. This communication lasts only as long as the other person structures or leads it; once he other person stops, the child will lose interest.

____ Which item above best describes your child?

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Group #8

1. ___ My child uses no make-believe or pretend play, either alone or with other people. (S)he may dismantle and/or rebuild objects but shows no sign of pretending that toys represent real things.
2. ___ My child creates his/her own make-believe play, but this play lacks real variation or feeling (for example, (s)he may pretend that a block is a cookie but repeats this behavior without changing it or without showing any real feeling).
3. ___ My child does not show truly creative make-believe play. (S)he only mimics other children who are using creative make-believe play.
4. ___ My child uses pretend play that is appropriately spontaneous, varied and creative.

___ Which item above best describes your child?

Group #9

1. ___ My child has no impairments in his/her ability to imitate others or mimic gestures, expressions, or motions of others, and (s)he mimics the behaviors of others spontaneously and appropriately.
2. ___ My child mimics others' simple gestures, expressions, or motions but has difficulty mimicking complex gestures, expressions, or motions (such as clapping behind one's back). His/her imitation abilities are moderately impaired, and (s)he does not mimic others' motions or gestures spontaneously.
3. ___ My child does not mimic simple motions or gestures (such as clapping or waving bye-bye) and does not mimic simple facial expressions.
4. ___ My child's imitation or mimicking abilities are only slightly impaired, if at all. (S)he can mimic complex gestures, expressions, motions. However, (s)he does not typically mimic the movements, gestures, or expressions of others spontaneously.

___ Which item above best describes your child?

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Group #10

1. ____ My child shows at least one of the following behaviors or body movements: lining up objects, spinning things or watching things spin, body rocking, hand flapping, finger flicking, unawareness of events around him/her, engaging in the same activities for a long time, unusual responses to pain.
2. ____ My child shows no unusual behaviors except during times of stress. During times of stress, unusual behaviors (such as hand flapping, spinning things, etc.) are seen.
3. ____ My child shows no unusual bodily behaviors (such as hand flapping, spinning things, etc.) but (s)he does show unusual patterns of conversation or social interaction, such as persistent questioning, constant talk about particular topics, and lack of understanding of social rules (for example, stands too close to other people, not able to take turns in a conversation etc.).
4. ____ My child does not show any unusual bodily behaviors (hand flapping, spinning things, etc.). Also, (s)he does not show unusual patterns of conversation or social interaction (persistent questioning, persistent talk about one topic etc.). His/her behavior is not unusual and is generally appropriate.

____ Which item above best describes your child?

Group #11

1. ____ My child does not insist on any inflexible daily routines and has a variety of appropriate interests.
2. ____ My child insists on certain inflexible daily routines or arrangements of the environment (for example, (s)he prefers to go through events in the same sequence every day or prefers to drive to school the same route or prefers that the furniture be arranged the same way every day, etc.). However, (s)he does not become upset (or becomes upset then is easily calmed) when these routines are disrupted or the environment has changed.
3. ____ My child is adaptable to changes in daily routine. However, (s)he tends to show a restricted range of interests or a preoccupation with one narrow interest. For example, (s)he may be overly interested in amassing facts about the weather or about trains.
4. ____ My child insists on certain inflexible daily routines or arrangements of the environment (exact same daily schedule, same route to school, etc.) And becomes very upset when routines are disrupted or the environment is changed.

____ Which item above best describes your child?

How well does this item describe the way your child behaves in everyday activities :

Never	Very Rarely	Rarely	Some- times	Frequently	Very Frequently	Always
0	1	2	3	4	5	6

Group #12

1. ___ My child is neither noticeably agile nor noticeably clumsy.
2. ___ My child is somewhat uncoordinated. (S)he is somewhat clumsy and awkward when walking, wary of climbing and balancing, or shows a "puppetlike" gait when walking.
3. ___ My child is agile in climbing and balancing, or walks with a springy, graceful gait. (S)he is particularly well coordinated and graceful and enjoys climbing and balancing.

___ Which item above best describes your child?

Group #13

1. ___ My child is generally well behaved, except on rare occasions, such as times of extreme stress, when (s)he may show physical behaviors that are irritating or difficult to handle (such as tantrums, aggression, odd body movements, hand flapping). Also, during times of stress (s)he might show difficult or bothersome behaviors related to conversation or social interaction (such as persistent questioning or long-windedness).
2. ___ My child is as easy or as difficult to manage as the typical child of his/her age.
3. ___ For my child, difficult or bothersome behaviors are related to conversation and social rules rather than to physical aggression or tantrums. For instance, (s)he engages in persistent, inappropriate questioning, (s)he is unaware of certain social rules (might stand too close to others or touch a person inappropriately, or might be too long-winded).
4. ___ My child is often difficult to control physically. (S)he throws temper tantrums, shows inappropriate behavior (screaming in public places, for instance), and/or is aggressive.

___ Which item above best describes your child?

Royeen Touch Scales

Please rate how well the following questions describe your child using the following scale:

	No 0	A Little 1	A Lot 2
1. Does it bother your child to go barefooted?	0	1	2
2. Do fuzzy shirts bother your child?	0	1	2
3. Do fuzzy socks bother your child?	0	1	2
4. Do turtle necks bother your child?	0	1	2
5. Does it bother your child to have his/her face washed?	0	1	2
6. Does it bother your child to have his/her nails cut?	0	1	2
7. Does it bother your child to have his/her hair combed by someone else?	0	1	2
8. Does it bother your child to play on carpet?	0	1	2
9. After someone touches your child, does (s)he feel like scratching that spot?	0	1	2
10. After someone touches your child, does (s)he feel like rubbing that spot?	0	1	2
11. Does it bother your child to walk barefooted in the grass and/or sand?	0	1	2
12. Does getting dirty bother your child?	0	1	2
13. Does your child find it hard to pay attention?	0	1	2
14. Does it bother your child if (s)he can not see who is touching him/her?	0	1	2
15. Does fingerpainting bother your child?	0	1	2
16. Do rough bedsheets bother your child?	0	1	2
17. Do your child like to touch others but is bother if someone touches him/her?	0	1	2
18. Does it bother your child when people come from behind?	0	1	2
19. Does it bother your child to be kissed by anyone other than parents?	0	1	2
20. Does it bother your child to be hugged or held?	0	1	2
21. Does it bother your child to play games with his/her feet?	0	1	2
22. Does it bother your child to have his/her face touched?	0	1	2
23. Does it bother your child to be touched if (s)he doesn't expect it?	0	1	2
24. Does your child have difficulty making friends?	0	1	2
25. Does it bother your child to stand in a line?	0	1	2
26. Does it bother your child when someone is close by?	0	1	2

Larson Touch Scales

Please rate how well the following questions describe your child, using the following scale:

	No 0	A Little 1	A Lot 2
1. Does your child avoid getting his/her hands in finger paints, paste, sand, etc.?	0	1	2
2. Does your child's body stiffen when (s)he is picked up?	0	1	2
3. Does your child seem to prefer to play alone?	0	1	2
4. Does your child enjoy playing with other children?	0	1	2
5. Does your child struggle against being held?	0	1	2
6. Does your child show a reaction to being pushed or hit by other children?	0	1	2
7. Does your child avoid using his/her hands for an extended period of time?	0	1	2
8. Does your child dislike being held, cuddled, or hugged?	0	1	2
9. Does your child object to being touched by others?	0	1	2
10. Does your child seem to lack awareness of being touched by others?	0	1	2
11. Does your child seem overly sensitive to bath temperature?	0	1	2