The Millennial Wish-cycler: Best Practices for Reducing Recycling Contamination

Kaitlin Robb Price
University of Florida, Department of Journalism and Communications

KEY POINTS

-Contamination rates are increasing as the value of recyclable materials decreases, leading to a need for timely strategic communication.

-While wish-cyclers need to understand the issue of recycling contamination, fatalistic doubt could push them to quit recycling altogether. Building self-efficacy and using positive reappraisal can help transition their false hope to constructive hope.

-Recycling doesn't provide feedback like a utility bill does. Games or gamification can be used to provide timely feedback. This can increase engagement with recycling contamination, educate participants, and reform wish-cycling habits.

-The most effective messaging might center around how it's our moral obligation to recycle correctly. A cute, anthropomorphized mascot could provide a moral nudge that helps to increase recycling rates while decreasing contamination.

ABSTRACT

Recycling contamination is a substantial issue that has received relatively little attention in the academic world. The millennial wish-cycler is a targetable audience for recycling contamination as they likely care about the environment but continue to place many non-recyclables in the recycling bin through aspirational recycling. While there are many potential ways to address the issue of contamination, including regulation, many of these solutions are not timely. Through a combination of applied theory and strategic communication, as well as input from experts, this paper presents three best practices to address the issue of wish-cycling millennials. An example section applies these best practices to create mock-ups that a waste management program could use as inspiration for their own contamination campaign. Finally, recommendations are given for how to evaluate any implemented contamination campaign. The strategies presented in this paper are intended to be timely and easy to conform to fit a county's individual needs.

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INTRODUCTION

Environmental writer Jeff Kart wrote that "For many Americans, recycling ranks ahead of some of the most confusing things in life, like building Ikea furniture, doing taxes, playing the stock market or understanding the opposite sex" (2019, para. 1). Recycling is an important environmental need, but high levels of contamination are leading to strains on the waste management programs of the United States. China now refuses to accept most recycling from the U.S., and the value of recyclable material is going down (Singer, 2017). This can also be seen in Figure 1, a chart from the 2020 State of Curbside Recycling Report by The Recycling Partnership (Mouw, 2020).

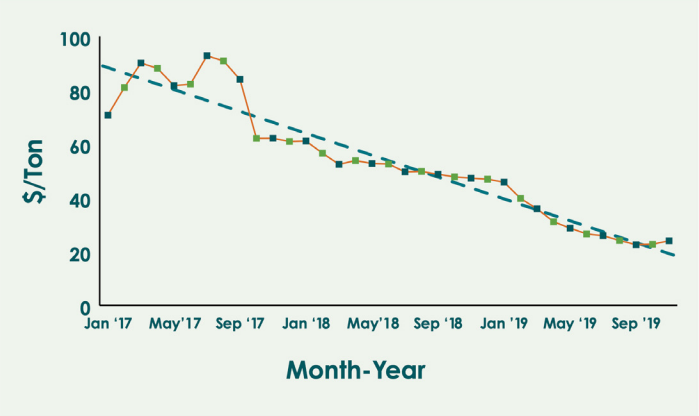

Figure 1: "Blended Material Values (including residues)" (Mouw, 2020, p. 31)

As Richard Stradling said, "…recycling only works when there is someone willing to buy the materials people put in their bins" (2018, para. 6). While there are many well-needed communication campaigns and resources focused on increasing recycling behavior (i.e. "Reduce, Reuse, Recycle"), there is a critical need to change and improve the recycling behavior of those who already do recycle.

Recycling contamination is the placement of non-recyclable items in recycling bins. Contamination rates average 25% across the country (Wright, 2018), and even those with manageable contamination rates are pressed to maintain them. There are a variety of factors that influence recycling contamination (Knickmeyer, 2020). For example, different counties accept different items and collect in different ways. When someone moves, there are an entire new set of rules to learn. One method to address this is regulation. Some ideas include universal rules for recycling programs across the country, mandatory recycling, or putting the responsibility for end-use on the manufacturer (Knickmeyer, 2020). This paper excludes regulation opportunities, but this is not to say that these are not needed or effective solutions. Rather, they are not timely solutions. These best practices for communication are a combination of interviews, literature reviews, and strategic communication. They are intended to be implemented now and conformed to fit a county's individual needs.

THE MILLENNIAL WISH-CYCLER

"When in doubt, throw it out" is a phrase used in many contamination campaigns, but if wish-cyclers had a motto is would probably be "When in doubt, recycle it." Wish-cycling, also known as aspirational recycling, is the portmanteau of the words wish and recycling. It relates to the desire to throw any questionable items in the recycling bin, either because someone else will figure it out or because it is better to try. These wish-cyclers, while likely well-intentioned, are contaminating recycling across the country. "We have a lot of aspirational recyclers," said Biderman, the executive director and CEO of the Solid Waste Association of North America (Singer, 2017, para. 21). "Contamination rates at recycling facilities have increased significantly over the past five years" (Singer, 2017, para. 21).

Education programs, particularly targeted towards children, are a great way to teach people to recycle correctly (Knickmeyer, 2020). However, millennial wish-cyclers, born between the years 1982 to 2000, are already past school-age (United States Census Bureau, 2015). Millennials are a unique audience when it comes to environmental campaigns. They're concerned about the environment. They support stronger environmental policies and regulation (Lee et al., 2019). They're well-informed, and they want to support envi-

ronmental initiatives (Lee et al., 2019). They're also not very likely to act on these intentions in their daily lives (Lee et al., 2019). That is to say, they want to do the right thing, but their actions do not reflect that (Lee et al., 2019)

Figure 2: University of Notre Dame Website (Mihalich, 2019)

The question then becomes, why do they continue to recycle incorrectly, and how can we target this behavior to reduce recycling contamination? Specific targeting and unique tactics are required to change the behavior of those that recycle but create contamination. This paper strives to provide well-thought out solutions to this issue.

BEST PRACTICES

1. Introduce Doubt- But Don't Crush Their Spirits

Using the emotion of hope for public interest communication is not a black-and-white issue. There are different types of hope (Marlon et al., 2019). For example, false hope is rooted in the belief that an external force will solve the issue (Marlon et al, 2019). By applying this to recycling contamination, as seen in Figure 3, we can argue that wish-cycling is a form of false hope. Wish-cyclers throw everything into the recycling, because they think it's better to try than to not. They also often believe that someone else will deal with the issue. Constructive hope, in comparison, is hope based on "seeing others act or believing that collective awareness is rising" (Marlon et al., 2019).

A recent study looked at how hope and doubt affect people's desire to take action on climate-related issues (Marlon et al., 2019). In this case, constructive hope was associated with a higher belief that a single individual can make a difference, as well as higher policy support and intention to engage in politics (Marlon et al., 2019). False hope, however, was associated with lower political intentions and policy support (Marlon et al., 2019). That is to say, why would someone work to solve an issue when they think it's out of their hands?

Similarly, fatalistic doubt, the belief that all hope is lost and nothing can be done, was associated with lower policy support and intention to take action (Marlon et al., 2019). Interestingly, there was a small uptick in policy support and intentions with constructive doubt, the belief that we aren't doing enough to make change (Marlon et al., 2019).

It's easy to see the parallels with recycling (Figure 3). False hope is wish-cycling, fatalistic doubt could be the thought of "why bother trying to recycle or recycle correctly, since it all goes to the landfill anyway." In order to address the wish-cyclers, we need to let them know that there is a problem (constructive doubt) but also build up a lot of constructive hope (the belief we can do something to solve the issue).

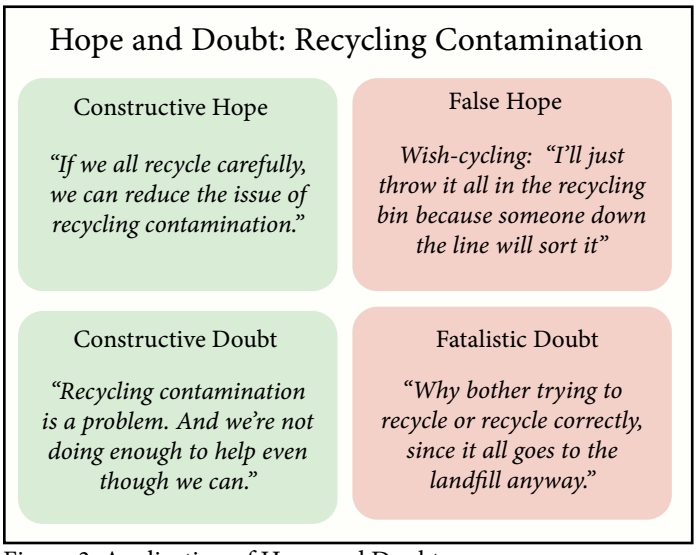

Figure 3: Application of Hope and Doubt

Another researcher conducted a similar study that looked at which factors most influenced young adults' intention to participate in pro-environmental

behavior with regards to household energy conservation (Ojala, 2012). Denial-based hope was negatively correlated with pro-environmental behaviors, while constructive hope was positively associated with behaviors like turning off lights when leaving a room and pulling unused phone chargers from sockets (Ojala, 2012). Ojala also provided a few ways to build constructive hope.

The first way Ojala provides is positive re-appraisal. Positive re-appraisal is, in simple terms, finding the silver lining. Sometimes environmental issues cause a lot of stress, especially because the world's problems cannot be solved instantaneously. With environmental issues, there is a lot of defeatism, or the feeling that there is no hope. Focusing on positive news or increased awareness can stave fatalistic doubt and defeatism. A few ways to do this are to create social media posts that highlight the issue of contamination but also show how others in the community are doing great things to help contamination (see Example 1).

An important factor to increase pro-social behaviors is self-efficacy. Psychologist Albert Bandura explained that "perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (1997). That is to say, "unless people believe that can produce desired effects by their actions, they have little incentive to act" (Bandura, 1997). There are many other studies that tout the importance of self-efficacy, including a study that found attitudes about recycling and self-efficacy had the largest effect on recycling rate behavior (Sujata et al., 2019).

One way to build self-efficacy is through collective action (Camilleri & Larrick, 2019). Collective action refers to messages that follow the formula of "if x people do y action, then z outcomes will be achieved" (Camilleri & Larrick, 2019, p. 550). Aggregating over more people is more persuasive, but there's a sweet spot at 1,000 people (Camilleri & Larrick, 2019). It's also important to not aggregate over time, as some people do not value future benefits as much (Camilleri & Larrick, 2019). An example for recycling is that "If 1,000 people recycled one glass jar instead of trashing it, then it would save enough electricity to light 6,660 light bulbs for an hour."

No matter which method you take, it's important to remember not to crush the spirits of those that recycle. They have hope, it is simply misplaced. To battle this, pair contamination messages (constructive doubt) with positive news stories or collective action statements (constructive hope) to use their hope to help.

2. Provide Feedback: Make It A Game

Every month, the majority of the people in the United States get a water or electric bill. This bill lets them know how much water or electricity their household uses every month. Even without researching the national or county averages, they can compare their current month bill with previous months. If the bill is higher, they want to investigate why. They may look up last month's bill and see that they used twice as much water, and they vow to cut back this month.

Recycling, for the most part, does not provide such feedback. When a consumer places an item in a recycling bin, it doesn't keep track of the amount of recycling, and it certainly doesn't tell them whether the item is contamination. Feedback is important, especially for habits like recycling (Comber & Theime, 2012). It's ideal that recycling is a habit, because it likely leads to increased recycling rates. The issue is that if the recycler has a bad habit (wish-cycling), that means you need some sort of feedback to disrupt the behavior, as they may not be aware of what they are doing wrong (Hermsen et al, 2016).

There are some tactics for providing feedback that work for recycling. Alachua County, Florida, has code enforcers that sporadically leave notes in consumers' recycling bins if their contamination is high (P. Irby, personal communication, Jan. 27, 2020). In Manchester, England, bins with low contamination were given special tags that could be redeemed into rewards for local schools (GMWDA, 2015). This 'Golden

Ticket' initiative was a community-based recycling rewards scheme that was very successful (Knickmeyer, 2020). One potential issue with these kinds of programs is that they are labor-intensive and can be expensive. They also provide delayed feedback, which is less effective in changing behavior (Luo et al, 2019).

One way to provide more timely feedback that doesn't require as much labor is through games or gamification. Gamification is applying game-based principles to non-game activities or items (Luo et al, 2019). Studies have shown that gamification works for a variety of pro-social behaviors, such as increasing environmentally-friendly food choices, tripling recycling rates, and battling misinformation (Berger, 2019; Berengueres et al, 2013; Roozenbeek & Linden, 2019). A study at the University of British Columbia (UBC) demonstrated that a game which provided immediate feedback would increase recycling rates while decreasing recycling contamination, even later on when feedback was no longer provided (Luo et al, 2019).

The video game used for the study at UBC showed an item on screen and prompted the participant to sort the item into food scraps, recyclable container, paper, or garbage bin (Luo et al, 2019). If they sorted correctly, the screen said "Correct!" and if they sorted incorrectly, the feedback said "Wrong!" and let them know what container the recycling should have gone in (Luo et al, 2019). This led to real increases in recycling rates and decreases in contamination in the tested university dorm (Luo et al, 2019).

As part of the *Up and Forward* project to increase recycling rates and decrease contamination in Manchester, a recycling game was developed called "Getting Wasted" (GMWDA, 2015). Together with the Manchester Metropolitan University, the game and its child-friendly version "Bin Bunny" were created using eye-tracking and focus groups (Games, n.d.). "Getting Wasted" is available as a free app on the Apple App Store and Google Play, as well in a web version (shown in Figures 4-6). The game was targeted toward students, but includes many important game elements, including the ability to share one's score on social media (Figure 6). Each round takes place in a different room, such as the computer room shown in Figure 5, which gave players the chance to sort different items into mixed recycling, paper and cardboard, landfill ("bin") and reuse. Items placed in the wrong bin were marked with the general prohibition sign and returned to the room to be tried again.

Figure 4: "Getting Wasted" Game Welcome Screen (Games, n.d.).

Figure 5: "Getting Wasted" Gameplay (Games, n.d.).

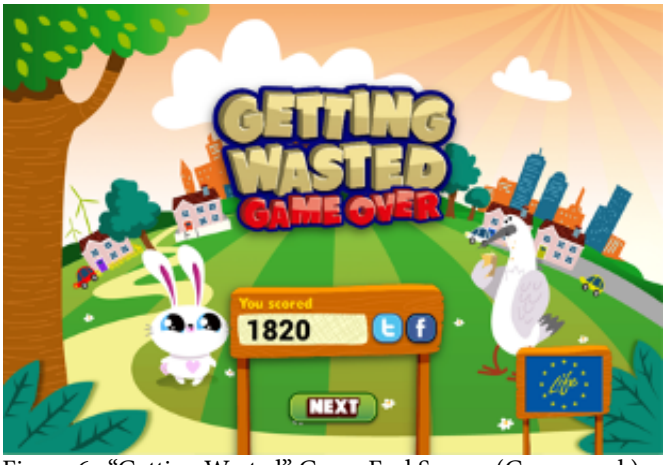

Figure 6: "Getting Wasted" Game End Screen (Games, n.d.).

Game and app development may be not be financially viable for all waste management programs, but there are other ways to utilize gamification, such as with an interactive quiz that lives on the county's website. For an example of this, see Example 2. Regardless of how you use gamification, it can be an effective way to increase engagement with recycling contamination, educate participants, and reform wish-cycling habits.

3. Morals and Mascots

Millennial wish-cyclers have already bought into recycling. Understanding their motivations for recycling may provide some insight into how to improve their recycling behavior. One of the major influences for recycling is moral norms (Botetzagias et al., 2015). That is, people tend to recycle because it is the morally right thing to do. While there are certainly other factors that influence why people recycle, multiple researchers have found that the desire to do what they feel is the morally right thing is a strong motivator for recycling (Botetzagias et al., 2015; Capraro et al, 2019; Knickmeyer, 2020).

Researchers at Ball State University and The Ohio State University studied how moral and nonmoral persuasive messaging influenced recyclers (Luttrell et al., 2019). They found that moralized issues are harder to change, unless you use moral messaging (Luttrell et al., 2019). The application here is that if people are recycling because they feel it is the morally right thing to do, then talking about the impracticality of contamination may be less effective than talking about the morality of recycling contamination. In other words, the most effective messaging might center around how it's our moral obligation to recycle correctly (see Example 3).

A recent study combined gamification and morality by testing games that used "simple moral nudges" (Capraro et al., 2019). In the games, participants were given choices that were either pro-self or pro-social. When given a "simple moral nudge" asking what they think is the morally right thing to do or what others think is the morally right thing to do, they were more likely to engage in pro-social behavior, even later on (Capraro et al., 2019). They also proved this isn't just a simulation, as moral nudges increased charity donations by 44% on average in Capraro et al.'s study (2019). The researchers speak to the many useful tactics to promote pro-social behavior, including providing material rewards and ambassador programs, but proposes moral nudges as a more cost-effective way to effect behavior (Capraro et al., 2019). Together, these papers imply that using moral messages might be more cost-effective and more persuasive for recycling contamination.

A unique way to apply this is through anthropomorphism. Applying human-like qualities to inanimate objects has been used as an effective communication strategy across fields, including for different environmental and pro-social campaigns (Han at al., 2019). Feeling "watched" by an inanimate object may be the simple moral nudge that wish-cyclers need to recycle correctly. A study on cuteness and pro-social behaviors found that cute visuals combined with active messages ("Recycle NOW!") increased recycling rates in a college dormitory (Wang et al., 2017). These effects were lasting, as recycling rates continued to increase over eight weeks (Wang et al., 2017). The researchers noted that cuteness brings out the nurturing, empathetic parts of people (Wang et al., 2017). These findings could be applied to a mascot sticker placed on each bin that says "Don't contaminate me!" and questions if they have put the correct items into the bin (Example 4).

There are many effective communication strategies for recycling, but the importance of morals comes up repeatedly. Especially considering the need for moral messaging for moralized issues, there's great opportunity in messaging around "doing the right thing" or simply through the moral nudge of a mascot.

EXAMPLES

Each county and waste management program has their own guidelines for what they will accept in their recycling bins. They also collect differently, with some having curbside pickup, single-stream recycling, or different colored bins. Therefore, in lieu of standard guidelines, it's important to take the best practices outlined in this paper and apply them to your own county or program. This can be done through your in-house marketing team or through an advertising agency.

These mock-ups were created to demonstrate how the best practices above can be applied. They are intended to help you visualize and brainstorm for your own program. The materials are mock-ups only and do not reflect any known current or future programming. Hopefully they spark ideas for how you could apply the best practices for your county. For example, the images in Example 1 show a volunteer model and fabricated stories to demonstrate the type of residents you might look for in your targeted area.

Example 1

As the first best practice in this paper stated, it's important to introduce doubt but not crush spirits. One great way to do this is by pairing contamination messages with messages of what others in the community are doing well. This action of putting the information in a better light is called positive re-appraisal. Figures 7 and 8 are two different mock-ups of Facebook posts. They feature a volunteer model, but the idea is to highlight how that person is doing their part to reduce contamination.

Figure 7: Social Media Mock-Up Example 1

Figure 8: Social Media Mock-Up Example 2

Example 2

This section includes images of how a quiz might be formatted. As discussed in the gamification section, a quiz can be a great way to provide feedback on the correct way to recycle. To disseminate the quiz, a link could be included in a welcome packet or on fliers. In addition, sharing the link on social media networking sites, such as Facebook and NextDoor, are a great way to increase engagement.

When creating a quiz for your program, have it simulate a game by asking the reader what bin the items go in. Then, whether the answer is correct or not, provide feedback by explaining the answer. For example, Figure 9 asks the quiz taker what bin a glass soda bottle goes in. If the quiz taker selects option B, which is correct, the screen would then display Figure 10. This figure explains that this county accepts glass of all colors but reminds the user of the exclusions. Similarly, Figure 11 shows a common contamination item: a polystyrene egg carton. If the user selects the incorrect answer, it shows Figure 12, which explains why the answer was incorrect.

Figure 9: Mock-Up Quiz Question 1

Figure 10: Mock-Up Quiz Question 1 Answer

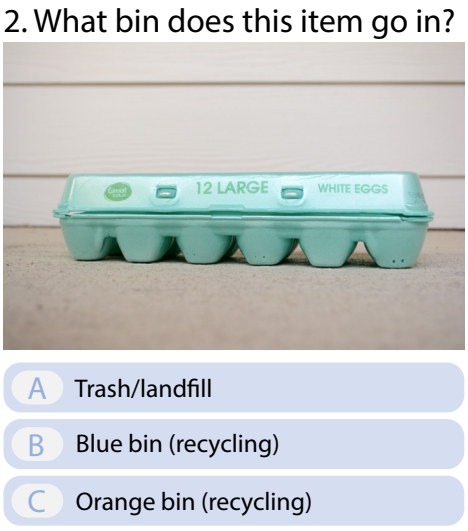

Figure 11: Mock-Up Quiz Question 2

Figure 12: Mock-Up Quiz Question 2 Answer

Here are a few tips to keep in mind when creating your own quiz:

- **Make it a game.** Even though it is a quiz and not a video game, you can still ask the user to sort the items into the correct bin.
- **Be specific.** Don't just ask if styrofoam can be recycled. Use common items like a polystyrene egg carton.
- **Use visuals.** It's helpful for the reader to see the actual item and make the connection between the game and real life. Include a photo of the referenced item for each quiz question.
- **Give feedback.** This is crucial. Be sure to ex plain the answer whether the quiz taker chose correctly or not.
- **Provide opportunities for sharing.** When the user receives a score, give them the chance to share it on Facebook, Twitter, or other social networking sites.

Example 3

The fliers shown in Figure 13 and Figure 14 apply the best practices described in Morals and Mascots. Figure 13 shows how you can combine this with a link to a quiz inspired by gamification. It speaks to the motivations behind recycling and calls on the reader to take it one step further. It strays away from crushing the reader's spirits and instead tries to build self-efficacy by providing a few keys ways they can recycle correctly (visiting the website or taking the quiz).

Figure 14 also applies some of the anthropomorphism principles by relating the recycling bin to a friend. It is saying, in essence, you wouldn't hurt your friends, so if you care about recycling, don't hurt it either. Both fliers include a clear call-to-action and provide resources to learn more information. As part of implementing any recycling contamination campaign, it's important to be sure your website is up-to-date and perhaps include some of the best practices outlined in this paper.

Figure 13: Mock-Up Moral Flier

Figure 14: Mock-Up Moral Flier with Friend

Example 4

This example applies the best practices of Morals and Mascots. The recycling bin in Figure 15 has "cute" characteristics of large eyes and a toothless grin. This is called kindchenschema cuteness, which is the most common type of cuteness (Wang et al, 2017). When making your own mascot, think of the features that a baby would have, as this is how you create kindchenschema cuteness (Wang et al, 2017).

This label would be applied to the bin directly. In addition to evoking feelings of cuteness, the label on the bin would be a simple moral nudge and a reminder to recycle correctly. Again, be sure to have a clear call to action and include links to a full list of recyclable items on your website.

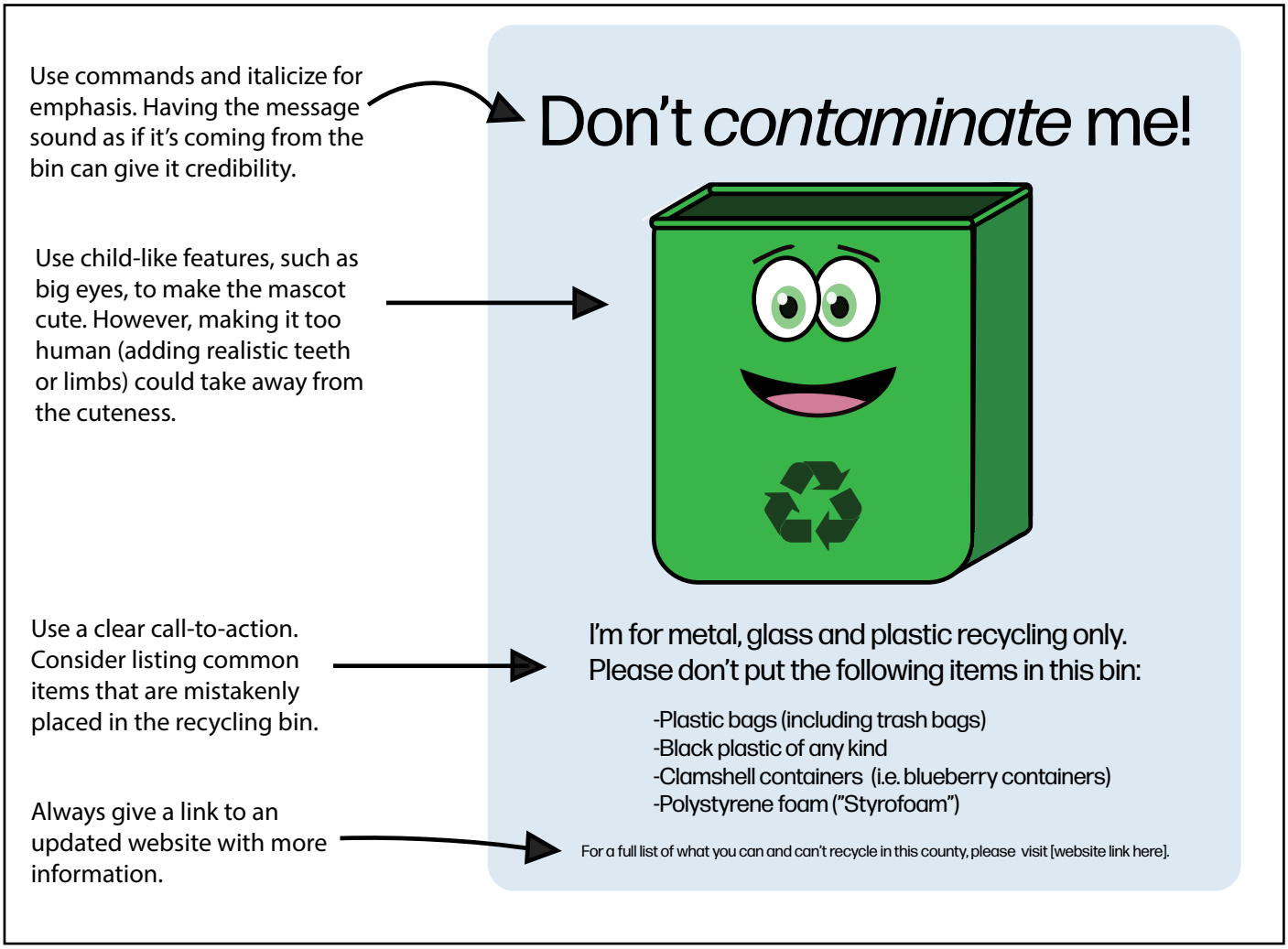

Figure 15: Mock-Up Anthropomorphized Recycling Bin

EVALUATION

As stated before, every county has different guidelines. They also have different audiences and different needs. While this paper provides best practices based on international research, a millennial audience will likely be different in California versus Alabama versus Poland. Therefore, as with any campaign, it is critical to conduct evaluation. Evaluation research serves three functions: to determine the expected impacts and outcomes, to determine why and how a program failed or succeeded, and to provide information for future campaigns (Rice et al, 2013).

Evaluation is done before the campaign at the formative stage, during the campaign as process evaluation, and after the campaign as summative evaluation (Rice et al, 2013). The formative stage includes preproduction research and pre-testing (Rice et al, 2013). Let's say you want to see how an anthropomorphic bin label (Figure 14) would work for your area. Here are a few ways that you could use evaluation at each stage:

1. Preproduction Research: use surveys and focus groups to find out what your audience currently knows about recycling, how they feel about recycling, what they want to learn about, and how they want to be reached (social media, radio, fliers, etc.) (Rice et al, 2013).

- This is also a great time to establish a baseline. Conduct a thorough waste and recycling audit of your chosen neighborhood.

2. Pretesting: in some ways, the first neighborhood you choose is a pretest for your entire county. However, to pretest further, gather a few community members and get their opinions on the label. Is it clear? Do they think it would encourage more recycling? If there are HOA leaders or other gatekeepers, be sure to include them as well, as they could have a hand in ensuring the labels are used.

3. Process Evaluation: once you've sent the bin label to everyone in the neighborhood, check to see how many bins have the labels on them. Talk to the trash collectors and find out how they think recycling behavior is changing.

4. Summative Evaluation: after the campaign has finished, conduct a waste audit again to see how recycling levels and contamination have changed. You can also have another focus group or survey to ask how the residents felt about the label or why they didn't use it. Do they feel more confident (self-efficacy)? Do they feel inspired to keep learning?

This may seem like a lot, but evaluation is critical for making sure that you are targeting people in the right way. Evaluation costs should be 10-15% of your total budget, and they ensure a higher rate of return (Rice et al, 2013). It's a necessary investment to set yourself up for success. If you conduct research before, during, and after your campaign, then you spread out the time necessary to conduct effective evaluation (Rice et al, 2013).

While one argument against evaluation is that it "takes away from the heart of the campaign", the truth is that it should be the veins of your campaign, running throughout it and ensuring it functions effectively (Rice et al, 2013). If your end-goal is to reduce recycling contamination, then having a baseline of recycling contamination and measuring the change does not detract from the main goal of lowering contamination. Rather, it is essential.

CONCLUSION

Recycling contamination is a timely issue. With value dropping and markets closing in, recycling programs are looking for creative, efficient ways to change the behavior of wish-cyclers. Imperative to this is understanding how and why wish-cyclers behave the way they do. While there are many factors that influence

their choices, multiple researchers have demonstrated that they are driven by the desire to do the morally right thing. Because of this, moral messages that speak to that desire may be one of the most effective ways to change this behavior. More subtly, the use of mascots could provide a simple moral nudge to inspire wish-cyclers to think twice before they contaminate their bin.

In addition, intention to recycle, and recycle correctly, is driven by self-efficacy, their belief that they can do something to help. While it's important to raise awareness of the recycling contamination issue, care should be given to building constructive hope as well. Pushing wish-cyclers too far could lead to complete inaction. Pairing constructive hope methods with contamination messages could be useful, and this can be done by including positive news stories and collective action statements.

In line with the importance of raising awareness, it's important to provide timely feedback to wish-cyclers to help them break their bad habits. While enforcement tactics can be labor-intensive, games provide an effective way to train a large audience on the proper way to recycle. In lieu of creating a desktop game or application, an interactive quiz could help wish-cyclers understand what they are doing wrong and reduce confusion about a county's guidelines.

There are many ways to address the issue of recycling contamination, including more regulation, but government intervention is not particularly timely. Implement these tactics into your county's waste management program as a timely, efficient way to target millennial wish-cyclers. Set baselines and conduct simple evaluations to see what your county responds best to, and remember that wish-cyclers are hopeful, just not in the right way.

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