**Notes & Litter-Related Studies**

*The following notes & links to research papers are taken from Dr Cecile Carson’s 2/15/22 webinar slides.*

**Slide 2: Defining the Issue**

Our studies confirm that littering is a complex issue with a mix of behavioral and psychological explanations that is best addressed with a similar mix of interventions. A decent body of work investigated behavioral solutions ([Almosa et al., 2017a](https://www.sciencedirect.com/science/article/pii/S0272494421001225); [Chaudhary et al., 2021](https://www.sciencedirect.com/science/article/pii/S0272494421001225); [Huffman et al., 1995](https://www.sciencedirect.com/science/article/pii/S0272494421001225)), whereas other work addressed various psychological factors and social contexts to understand littering (e.g., [Bonnes et al., 2011](https://www.sciencedirect.com/science/article/pii/S0272494421001225); [Brown et al., 2010](https://www.sciencedirect.com/science/article/pii/S0272494421001225); [Long et al., 2014](https://www.sciencedirect.com/science/article/pii/S0272494421001225)). However, successful anti-littering campaigns will require methodical combinations of the two approaches.

Q.152 - % consumers who completely/somewhat agree with the statement – **Natural Marketing Institute** 2016 USA Sustainability Consumer Trends Database

GZ- 43%; Millennial – 42%; GX – 48%; Boomers 41%; Seniors 41%

62% Pennsylvania and 63% South Carolina is a serious issue

“I am more concerned about environmental issues. I can see like litter, abandoned buildings, etc., compared to those I can't see, such as global warming, pollution, etc.”

**Slide 3: Research – Litter Attracts Litter**

If littering becomes the descriptive norm, even slight initial increases may stimulate bigger increases ([Cialdini et al., 1990](https://www.sciencedirect.com/science/article/pii/S0272494421001225)).

**Slide 4: Research – Litter Behavior**

The observation team coded the distance (in feet) from the disposer to the nearest receptacle (trash, recycling, or ashtray). Although there were several instances of littering that occurred immediately adjacent to a receptacle, most littering occurred at a considerable distance (mean distance to a receptacle at time of littering was 29 feet).

Walt Disney Co. 25-30 paces for proper disposal. Walt Disney wanted to know just how long a park patron would go with trash in their hand before just letting it drop to the ground. So he sat on a bench and watched the visitors of his park, counting the steps of those looking for a place to throw out their garbage. He counted 30 steps on average, and that is still the distance between each trash can in Disney, further ensuring a clean experience. [There are many rules at Disney](https://www.thedailymeal.com/travel/do-one-these-6-odd-things-disney-park-and-you-might-end-getting-thrown-out), but no littering is one of the easiest ones to follow!

Littering increases steadily the further away from a container increasing 3 fold

Significantly fewer trash receptacles at sites where people littered (Schultz et al 2010).

**Slide 6: Research – Container Placement / Norms**

When waste receptacles are too far away, people may not be prepared to hold on to their waste items for the next available opportunity to discard them ([Schultz et al., 2013](https://www.sciencedirect.com/science/article/pii/S0272494421001225)), very likely because they are not willing to spend the effort ([Diekmann & Preisendörfer, 2003](https://www.sciencedirect.com/science/article/pii/S0272494421001225)). People may also be habituated to specific locations for waste disposal and unsure where to leave their waste items when receptacles are not in their usual spot. To illustrate, on a few occasions we found some waste items deposited at the exact prior location of a removed waste receptacle in the experimental conditions, sometimes neatly wrapped in a plastic trash bag. Additionally, other research found that around 25% of people say to only litter when there is no waste receptacle nearby, and that availability of waste receptacles would be most effective in preventing them from littering ([Al-Khatib et al., 2009](https://www.sciencedirect.com/science/article/pii/S0272494421001225)). Moreover, research on descriptive norms suggests that litter will attract littering ([Cialdini et al., 1990](https://www.sciencedirect.com/science/article/pii/S0272494421001225)). This may help explain why litter levels in Phase 3 generally did not revert to baseline levels (Phase 1) in Study 2 and 3. Together, evidence from the these two studies suggests that simply removing waste receptacles from parks is not a good strategy to address littering.

The placement of waste receptacles in urban parks is an important issue in fighting litter. Many parks have a number of small waste receptacles strategically positioned across the grounds, preferably close to benches and along busy walkways. Emptying those is rather labor intensive, however. Relocating waste receptacles to the park exits for more efficient waste collection can offer a solution, but only under certain conditions. To investigate, we removed all waste receptacles from within an urban park and placed them at the exits in three consecutive field studies. We found that without further communication or other interventions litter levels increased from initial baseline (Study 2 and 3). However, adding a psychological intervention in the form of watching animal eyes reversed this effect and made for a slightly cleaner environment (Study 4).

Fewer containers can lead to more litter unless other interventions are included older participants endorsed stronger antilittering norms

We base this suggestion on our test of relocating waste receptacles in combination with watching animal eyes in a short intervention. Such a strategy may not be a long-term solution and does not disqualify other kinds of interventions and/or combinations. Instead of using eyes, one could think of (audiovisual) media campaigns at the local, regional, or even national level, or specific signposting at the entrances or throughout the park. Waste receptacles do not need to be located at the exits specifically, as long as there is an efficient way of emptying them on time to prevent spillage.

When looking at the practical implications, the main finding of our studies is that a simple reorganization of waste collection by relocating existing receptacles to the exits of a park is not effective. Littering is likely to increase, which will require extra and usually costly cleaning rounds. However, a focused blend of appropriate interventions has more chance when fighting litter. We found that a combination of watching eyes and no waste receptacles within the confines of the park helped to decrease litter levels – even though it was small and not perceived as such (Study 4). From the perspectives of environmental protection and efficiency in waste collection, this is hopeful. Given the multifaceted and complex psychological mechanisms that shape environmentally friendly behavior, an integration of approaches is more likely to help reduce littering than targeting a single mechanism ([Liu & Sibley, 2004](https://www.sciencedirect.com/science/article/pii/S0272494421001225)).

**Slide 7: Research – Beauty & Cleanliness**

Honolulu Litter Study, 2018; Schultz et al., 2013; [Van Doesum et al., 2021 (*Aesthetics and logistics in urban parks; can moving waste receptacles to park exits decrease littering?)*](https://www.sciencedirect.com/science/article/pii/S0272494421001225)

Across all ratings, perceived beauty and cleanliness were positively correlated. Controlling for order effects and in line with expectations we found that a park without visible waste receptacles was consistently rated as more beautiful, Asked about responsibility, participants held the municipality more responsible for a beautiful park than its visitors, whereas visitors were believed to be more responsible for a park's cleanliness.

Environmental cleanliness has produced consistent results when used as an independent variable, with research indicating that people litter less in clean places (Rangoni & Jager; Reiter & Samuel). It is noteworthy that a situation such as ‘litter already present in the environment’ is related to a social norm (i.e., what is already occurring in the environment). However, past research has not discussed the overlap between variables such as anti-litter norms (psychological variable) and environmental cleanliness (situational variable).

**Slide 8: Research – Litter & Appearance**

er Beauty of the park (3 items, α = 0.82) and cleanliness (3 items, α = 86) were rated, and park attachment was measured using five items (α = 0.91) ([Williams & Vaske, 2003](https://www.sciencedirect.com/science/article/pii/S0272494421001225)).

Lids matter (Honolulu Litter Assessment, 2018)

Lack of access in public space, caused by a shortage of well-maintained receptacles, contributes to littering behavior (“RW Beck,” 2007). Maintenance of receptacles is also required for access to recycling opportunities, especially in public spaces (“Littering Behavior,” 2009).

The research has often used situational factors (e.g., the availability of trash cans and environmental cleanliness) as *independent variables* to understand littering behavior Research results indicate that more people dispose of their litter properly in the presence of trash cans (Al-Mosa et al.,; Geller et al.. However, the findings are contradictory as the research also posits that the presence of trash cans does *not* lead to a decrease in littering behavior (Burgess et al.,; Wilson et al.). The possible reasons for contradictory findings could be the fewer number of bins, bins not in sight and bins already filled with waste.

**Slide 9: Most Important/ Influential Messages**

A strong sense of community has been associated with improved wellbeing, increased feelings of safety and security, participation in community affairs and civic responsibility.

Awareness and messaging (Meeker, 1997; Bator et al, 2010; Carson, 2021) Use messages that highlight social disapproval for littering and preference for clean, litter-free communities.

**Slide 10: Conclusions**

Clean and Beautiful BUT leaning up littering without making changes in infrastructure will produce only short-term effects. What to avoid: messages about not littering in littered context.

Presence of existing litter

Availability of trash receptacles Availability and Maintenance

Crowdedness

Personal norms (moral obligation)

**Awareness and motivational campaigns (done right)**

* Littering is largely a function of individual motivation
* Messages that show littering as common will undermine litter prevention
* Messages of social disapproval for littering, and preference for clean communities
* Availability and convenience of receptacles strongly predictive of littering
* Need for recycling infrastructure
* Opportunities for sponsored or branded receptacles
* Placement is critical