

Understanding Recycling while Tailgating: Applying an Information-Motives-Behavior Skills Approach



Stephanie J. Zawadzki[†], Forrest G. Schwartz, Jordan C. E. Blair, Eric C. Larson, and Jennifer N. Newton
The Pennsylvania State University

[†]Please contact slj204@psu.edu with questions

Rationale

Problem Statement: Most academic studies that examine recycling behavior to date focus on household or curbside behavior. However, the environmental impacts of sporting events require attention due to their unique venue and the particularly large scale of their impact. For example, at Penn State, game and tailgating events produce 50-100 tons of waste each *game*¹, but in 2008 football *season*, PSU recycled 112 tons of waste².

Qualitative data³ suggests tailgaters face unique barriers to recycling:

- High positive attitudes
- High misinformation about venue's infrastructure
- Low access to recycling facilities

Theoretical Background: We selected the IMB model because of its ability to identify possible avenues for behavior change⁴ and because it has been found to predict recycling behavior⁵. According to IMB⁶, behavior patterns are a function of:

- Information
- Motivation
- Behavioral Skills

Research Purpose:

- Identify who among tailgaters is using the provided recycling infrastructure and how much
- Identify psychological factors that predict recycling at tailgates
- Identify possible avenues for future intervention

Method

Participants: 415 tailgates (97%) agreed to be observed and have one member complete our survey, for a total of 2,741 tailgaters observed.

Procedure: Researcher pairs measured observed behavior (group level) and surveys (individual level). One survey per group was completed.

Observed Measures:

- Use of venue waste infrastructure (visible used and unused venue trash, venue recycling, and waste bags brought from home)
- Estimated group demographics (i.e. no. men, no. women, age, amount team apparel/décor)

Survey Measures:

- Venue Infrastructure **Information** (5 items; e.g. "I know where to leave my recycling when I'm done tailgating at Penn State."), alpha = .76
- **Motivation** to recycle (3 items; e.g. "Recycling at Penn State tailgates is important to me."), alpha = .49**
-Single-item chosen to represent this construct
- **Behavioral capacity** to recycle at venue (3 items; e.g. "Recycling at Penn State tailgates takes too much time."), alpha = .68
- **Outcome:** "I am currently or plan to recycle at today's tailgate."
- Demographics (i.e. PSU alum, frequency of tailgating, home recycling behavior)

References:

1=PSU Sustainability Institute website, 2013
2=EPA, 2009
3=McCullough & Cunningham (2011). *Intl Jnl Sprt Mgmt and Mktg.*

4=Dartan, 2008. *Govt Socl Rsrch.*
5=Seacat & Northrup (2010). *Jnl Env Psy.*
6=Fisher, Fisher, Williams, & Malloy (1994). *Hlth Psy.*

How much are tailgaters using the venue's infrastructure?

Observed Frequencies:

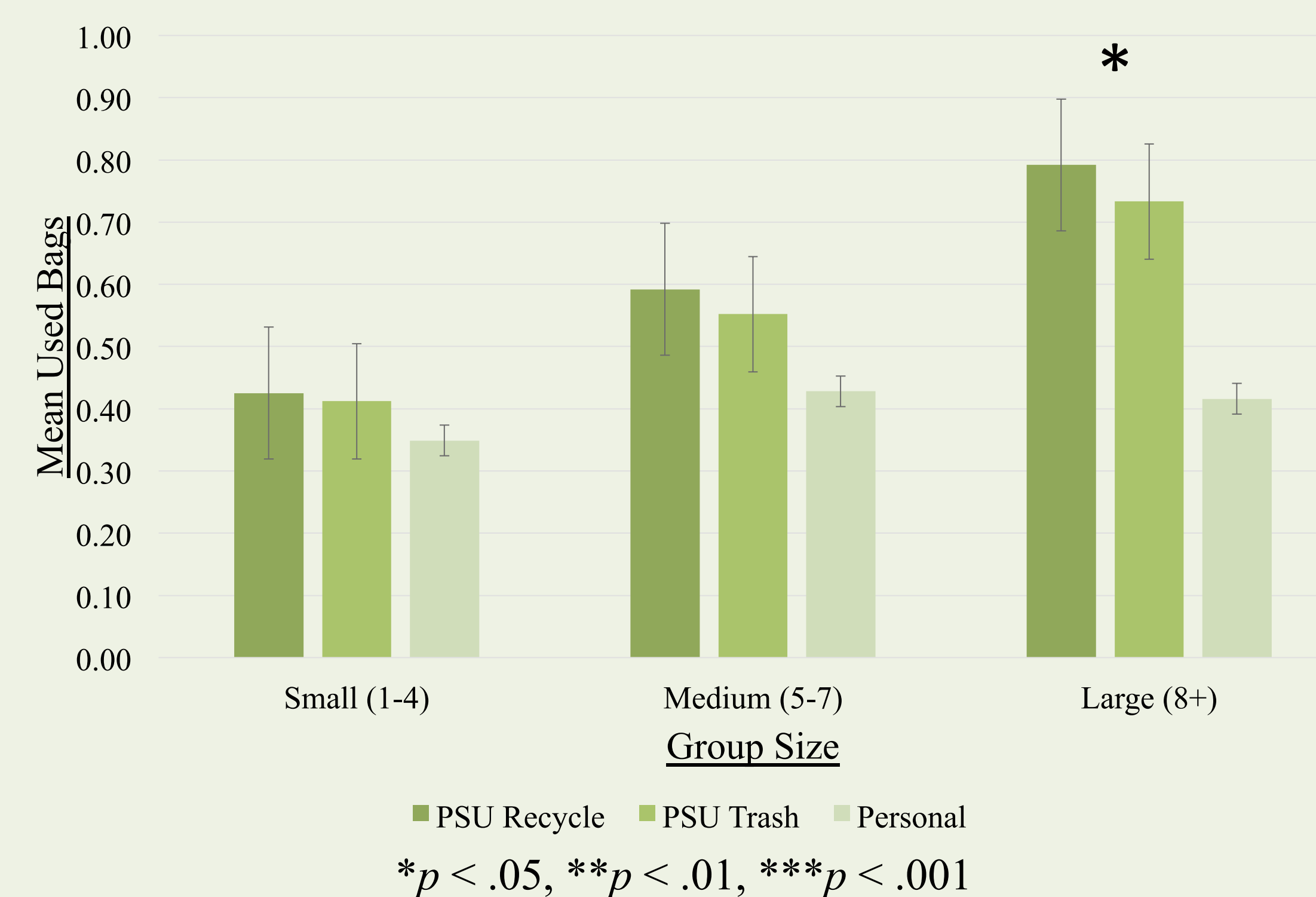
N	%	Bags Used	Meaning for Env. Impact
202	48.7	PSU recycling (with and without other trash bags)	Lessens venue impact
99	23.9	Personal only	Unknown
32	7.7	PSU trash only	Increases venue impact
69	16.6	No visible bags	Unknown

Who is using the venue's infrastructure?

	Correlations of bag-use variables and group demographics					
	M	St. Dev.	PSU Gear	Opponent Gear	Est. Modal Group Age	Group Size
No. Used PSU Rec. Bags	0.52	0.60	.33***	-.07	-.04	.28***
No. Used PSU Trash Bags	0.50	0.61	.32***	-.09	-.04	.23**
No. Used Personal Bags	0.42	0.63	-.02	.05	-.02	.11*

Analysis (Observed): 3(group size: small, med, large) X 2 (psu gear: apparel only, more than apparel) X 3(bag type: recycling, trash, personal) mixed-model ANOVA with repeated measures on the third variable

- Fewer personal bags observed than PSU recycling or trash bags, $F(2, 720) = 11.56, p < .001$
- Sites with more gear present were observed using more bags, $F(1, 360) = 23.16, p < .001$
- A marginally significant interaction between group size and bag type was found, $F(4, 720) = 2.15, p = .07$.



Who is most likely to recycle while tailgating?

Analysis (Survey): Regression analyses revealed information, motivation, and behavior skills to be significant predictors of reported recycling behavior at tailgates when controlling for home recycling behavior.

Table 4

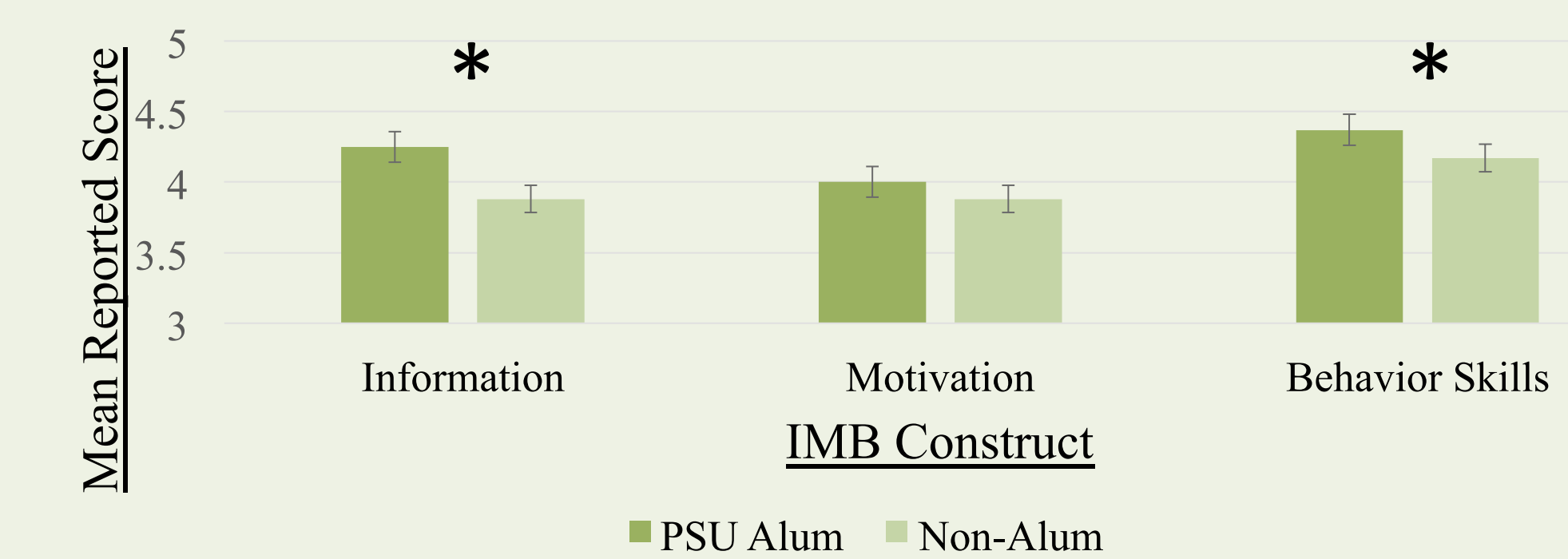
Means and regression coefficients for information, motivation, and behavior skills, controlling for frequency of tailgating and home recycling behavior on reported recycling behavior at the tailgate

Variable	Means (SD)	Unstandardized Beta	S.E.	Standardized Beta	t	p-value
Intercept		-.06	.28		-.21	.84
Tailgating Frequency	2.66 (1.42)	-.03	.03	-.05	-1.24	.22
Home Recycling Behavior	4.51 (.87)	.20	.04	.20	4.82	<.001
Information	4.07 (.78)	.21	.05	.19	4.07	<.001
Behavior Skills	4.25 (.78)	.30	.05	.26	5.89	<.001
Motivation	4.53(.76)	.35	.05	.30	6.77	<.001

R²=0.64, R²-adj=0.41

Follow-up analyses: Because the IMB model was supported in our tailgating sample, we wanted to know **who among tailgaters was most likely to report high information, motivation, and behavior skills.**

- 3 Independent-samples t-tests revealed that alumni were more likely to have higher information and behavior skills, but not motivation to recycle while tailgating.



- Regression analyses revealed a similar pattern for tailgating frequency.
- Home recycling behavior was a significant predictor of all three constructs

Outcome	Predictor	Unstandardized b	Std. Error	Standardized b	t	p-value
Information	Tg Freq.	.194	.025	.351	7.64	<.001
	Home Beh.	.166	.041	.184	4.011	<.001
Motivation	Tg Freq.	-.009	.026	-.017	-.366	.72
	Home Beh.	.271	.042	.308	6.472	<.001
Beh. Skills	Tg Freq.	.133	.026	.25	5.198	<.001
	Home Beh.	.105	.042	.121	2.512	.012

Information R²=.16, R²-adj=.15; Motivation R²=.10, R²-adj=.09; Behavior Skills R²=.08, R²-adj=.07

Conclusions

- Groups of 8+ are more likely to use the venue waste infrastructure than smaller groups, and they use more of it.
- Tailgaters' information, motivation, and behavioral skills predicted tailgater recycling.
- **Future interventions** may want to relate tailgate recycling to home recycling.
- Interventions need to be target specific to attend to different audiences' strengths and use patterns of the venue's infrastructure (e.g. alumni status, home recycling).
- **Future studies** should investigate the contribution to venue impact of bringing personal waste bags to tailgate.