Paying People to Protect the Environment: A Meta-Analysis of Incentive Interventions to Promote Proenvironmental Behaviors

Alexander Maki[1], Rachel J. Burns[2], Long Ha[3], & Alexander J. Rothman[1]
[1]The University of Minnesota, [2]McGill University, & [3]Ohio State University

Introduction

• A common approach to changing proenviromental behaviors (e.g., recycling, travel behavior) is the use of financial incentives (e.g., cash, transit tickets; Osbaldiston & Schott, 2012).

• Past work has tended to ignore how different incentives affect proenvironmental behavior, even though contemporary psychological theory proposes that specific properties of incentives (i.e., type and schedule) may influence behavior (Burns et al., 2012).

• For example, variable schedules of reinforcement, such as varying the amount of the incentive, should be more effective as compared to fixed schedules, such as always providing the same amount of the incentive.

• Past research comparing cash versus non-cash incentives has also tended to find that non-cash incentives are more effective at changing behavior.

• We also set out to determine how the effect of incentives might vary by the type of proenvironmental behavior.

Inclusion Criteria and Literature Search

• There were five inclusion criteria for this meta-analysis. Studies had to:

1. Measure a typical proenvironmental behavior (e.g., recycling, energy conservation, public transportation use).

2. Manipulate at least one type of incentive to change behavior (e.g., coupons, tickets, cash).

3. Use an experimental, quasi-experimental, or repeated-measures design.

4. Compare at least two groups or two time points.

5. Measure behavior.

• The following databases were searched January, 2013: Business Source Premiere, Digital Dissertations, Econlit, PsychINFO, and Web of Knowledge.

Method

• Figure 1 below shows the flow of information during the review process.

• The final meta-analysis included 21 studies (for 29 total effects) that met the inclusion criteria.

• There was a high level of agreement between coders (kappa coefficients *M* = 0.65 and intraclass correlations *M* = 0.86; disagreements were resolved through discussion.

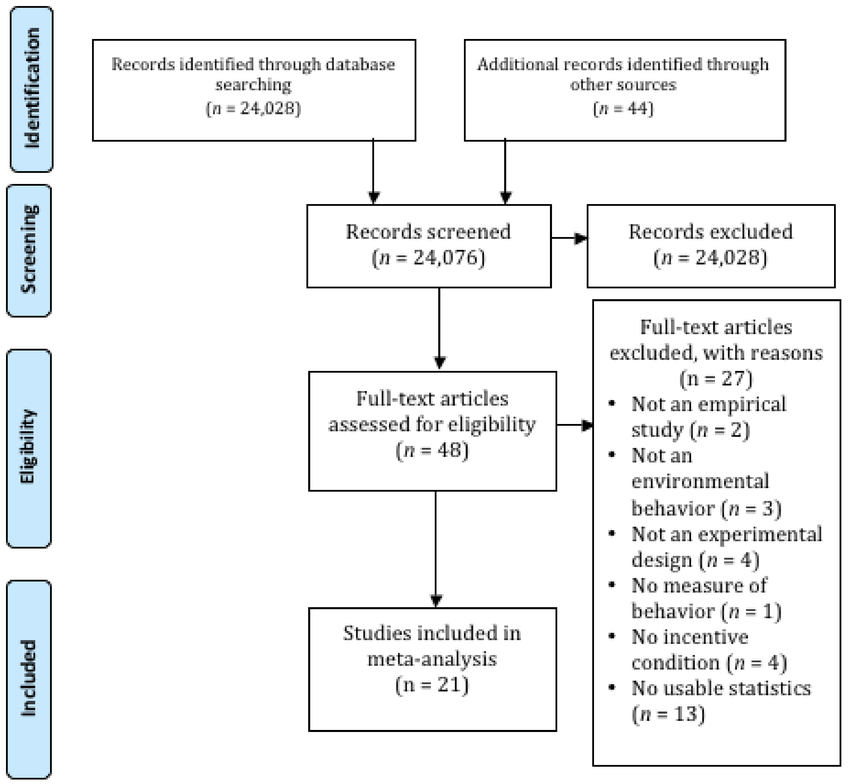

Figure 1: *Flow of information through the phases of the review.*

Results

•Table 1 below shows the effect of cash and non-cash incentives on proenvironmental behaviors.

	Cash					Non-cash				
	k	*N*	d_+	*95% CI*	*Q*	*k*	*N*	d_+	*95% CI*	*Q*
Recycling	8	899	.38	.05 to .71	35.08***	3	306	.17	-.05 to .40	1.34
Energy Conservation	1	352	.15	-.06 to .36	N/A	5	628	.29	-.03 to .60	6.53
Travel Behavior	3	380	.16	-.55 to .87	0.19	5	755	.49	.22 to .76	6.02

Table 1: Effect of cash and non-cash incentives on recycling, energy conservation, and efficient travel behavior

Results and Conclusion

• Incentive interventions on average have a small-to-medium effect on behavior both while incentives are in place (d_+ = .34.) and after their removal (d_+ = .42).

• Variable schedules, as compared to fixed schedules, were more effective at changing proenvironmental behaviors when the incentive was in place (d_+ = 0.45 vs. d_+ = 0.30); there was not a significant difference after the incentive was discontinued.

• Cash incentives elicited greater change in recycling behaviors than did non-cash incentives (d_+ = .38 vs. d_+ = .17), whereas non-cash incentives elicited greater change in travel behavior (e.g., public transportation use, carpooling; d_+ = .49 vs. d_+ = .16) and energy conservation (d_+ = .29 vs. d_+ =.15).

•With only one study using negative reinforcement, comparisons of positive versus negative reinforcement was not possible.

• This meta-analysis suggests when incentives are effective for changing proenvironmental behaviors, as well as current gaps in the literature.

References

Burns, R. J., Donovan, A. S., Ackermann, R. T., Finch, E. A., Rothman, A. J., & Jeffery, R. W. (2012). A theoretically grounded systematic review of material incentives for weight loss: Implications for interventions. *Annals of Behavioral Medicine*, *44*, 375-388.

Osbaldiston, R. & Schott, J. (2012). Environmental sustainability and behavioral science: Meta-analysis of pro-environmental behavior experiments. *Environment & Behavior, 44*, 257-299.

This work was supported by the National Science Foundation through a Graduate Research Fellowship to Alexander Maki.

This poster was presented at the 2015 Society for Personality and Social Psychology Annual Conference in Long Beach, California. For further information regarding this study please contact: Alexander Maki, University of Minnesota, maki0163@umn.edu