

Waste Management Policies and Self-Enhancement Bias

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Waste source separation has been a social dilemma globally with a low participation rate.

Keywords: self-enhancement bias ; mandatory policy ; supervision ; waste separation

1. Introduction

Waste separation has emerged as a major challenge to environmental management worldwide. There is less available land for large-scale waste disposal in landfills and incinerators. According to the World Bank ^[1], the amount of global waste will increase from 2 billion tons in 2016 to 3.4 billion tons in 2050 with rapid population growth and urbanization. The growth of waste levels has become a critical global issue because it poses a threat to human health and causes environmental pollution. Separating waste at the source has become a vital element of waste management strategies for reducing waste in many countries ^{[2][3][4]}. Given the urgency of waste disposal problems, many municipalities have implemented waste separation policies to reduce landfill or incineration use ^{[5][6][7]}.

The types of environmental regulation or regional policies (e.g., mandatory vs. voluntary) may lead to the illustration of different waste separation or recycling rates ^{[8][9][10][11][12][13][14]}. For instance, the recycling rates range from 1% in Louisiana (USA) to 56.1% in North Kevesten (UK) where the EU's Landfill and Waste Framework directives were implemented ^{[7][15]}. The recycling rate in Ireland increased from 11% in 2001 to 33% in 2011 since the introduction and implementation of the Landfill Directive 1999/31/EC, the WEEE directive 2002/96/EC, and the Waste Framework Directive 2008/98/EC ^[5]. The recycling rate reached 85% within three months when New Jersey, U.S. mandated recycling and promoted a curbside pick-up program ^[2]. In the early 1990s, China started to implement waste separation policies to promote the participation rate of waste separation. A new national-level policy was issued in 2017, and 46 pilot cities were selected to implement the new mandatory waste separation policy "Implementation plan on the household solid waste classification system." Shanghai became the leading city in 2019 to enforce the mandatory waste separation policy ^{[16][17][18][19]}. It concluded that the mandatory policy could reduce household food waste. This showed that policies would affect the effectiveness of waste management.

Although some waste management strategies have been implemented, waste source separation has not been successful due to a lack of public participation thus far ^{[3][8][20]}. Despite numerous public awareness campaigns conducted over the years, public participation in waste separation is still at a low level ^{[4][17][21][22][23][24]}. Most residents express a willingness to separate waste, but only a few perform the task on a daily basis ^{[20][22][25][26]}. Thus, it is a key question to promote public participation in waste separation.

Moreover, waste source separation efficiency depends on the concerted efforts of social members ^{[8][17][21][27]}. Similar to other prosocial behaviors, such collective action is vulnerable to the free-rider problem ^{[28][29]}, which could be solved through externally enforced regulations such as mandatory policies ^[30]. Others' behaviors greatly affect our actions because we are strongly influenced by others ^{[31][32]}. Solving the commons dilemma requires cooperation with oneself and others. People are conditional cooperators, and they contribute only if others also do so ^{[33][34]}. However, it is unclear how people perceive themselves and others in terms of policies and behaviors of waste source separation.

2. Waste Separation Policies

An effective environmental regulation system is a crucial driver to the improvement of waste source separation. Based on the literature ^{[10][35][36]} and the situation in China, we conceive that waste separation policies can be classified into three types: mandatory policy, voluntary policy, and no-implementation policy. Mandatory policies refer to the rules governing behavior, and policymakers design a package of commonly agreed standards, penalties, supervision, and enforcement

when mandates are used [35][36]. Previous studies suggest that mandatory policies play key roles in promoting waste separation [20][37][38][39]. For instance, in July 2019, Shanghai took the lead in formulating and implementing a mandatory waste separation policy via supervisory guidance, penalties, regulated disposal times, and others [40], and its waste separation rate increased from 15% to 80% [41]. Many educators and funding agencies share the belief that mandatory policies increase public participation and compliance with waste separation regulation.

The mechanism of efficient mandatory policies can be explained by deterrence theory, which proposes that mandatory policies can act as a deterrent [20][42]. Deterrence theory assumes that individuals make rational decisions through a cost-benefit analysis. If the expected cost of offending behaviors outweighs the expected benefits, individuals are less likely to engage in offending behaviors. These offending behaviors could be deterred by enhancing three elements of punishment, including certainty, severity, and celerity [42]. Certainty refers to the possibility that illegal waste separation behavior will be discovered and punished, severity reflects the harshness of punishment incurred, and celerity refers to the timeliness of penalty execution [43][44].

Although theoretically efficient, some studies suggest that mandatory policies might not always be effective. For instance, following the example of Shanghai, the city of Zhengzhou implemented a waste separation policy in December 2019. However, the separation rate in Zhengzhou showed less improvement (from 10.1% to 17.8%) [24]. Some studies also found a weak relationship between policies and waste separation behavior [17] and showed that a more stringent waste policy might increase the illegal disposal of waste [45].

Mandatory policies cannot work in some situations. One possibility could be an absence of supervision or compulsory actions to guarantee the implementation of policies. These can be regarded as voluntary waste separation policies which have been implemented without intervention by the government. Waste separation is strongly recommended by the government. However, if somebody did not separate waste, he or she will not be punished. A non-compulsory or voluntary-based policy could not effectively restrain residents' free-riding behavior, so it had little effect on their waste separation [20]. In contrast, several studies have found that volunteer supervision significantly facilitates waste separation [46][47][48]. This evidence suggested that voluntary policies had a weak impact on waste separation unless supervision or feedback was implemented. Therefore, the effectiveness of waste separation may depend on a country's enforcement, sanctions, and supervision.

In China, 46 pilot cities were selected to implement mandatory waste separation policies. The policy facilitated waste separation with strict supervision in some cities, such as Shanghai [41], while it influenced weakly in other cities, like Zhengzhou, without supervision [24]. There was even a no waste separation policy implemented in many cities such as Shangrao of Jiangxi Province. Taken together, different types of waste separation policies (i.e., a mandatory policy with supervision, voluntary policy without supervision, and no-implementation policy) showed different effects on actual waste separation behavior.

Here, we investigate the effectiveness of mandatory, voluntary, and no-implementation policies in encouraging waste separation behavior through three studies. Based on prior studies and intuitive reasoning, we expected that mandatory policies with supervision would increase the likelihood of waste separation behavior but voluntary without supervision could not. We also predicted that a no-implementation policy would have insignificant impacts on waste separation behavior.

3. Self-Others Discrepancies

Recyclables become contaminants when someone engages in incorrect waste separation [46]. Some people are reluctant to sort waste because they might feel that others engage in free riding, and thus that their contributions would be useless. This is a social dilemma. Tam and Chan [32] proposed that people who were concerned about environmental issues were reluctant to adjust their behavior due to a fear of being exploited by free riders. Our perception of others' behavior may affect our own level of cooperation. Solving the commons dilemma requires cooperation, and the behavior of others then becomes an important consideration [34]. However, it is unclear how people perceive themselves and others in terms of waste separation behavior and whether self-others discrepancies exist for different types of policies.

Self-others discrepancies refer to the difference between self-perception and how an individual perceives others [49]. According to the theory of social comparison [50], people possess a drive to engage in self-evaluation by comparing themselves to others. The tendency to compare ourselves to others is a fundamental, ubiquitous, and robust human proclivity [51].

Human beings hold an excessively positive view of themselves and of things associated with the self when they perceive themselves and others. People tend to believe that they are better than others in many favorable characteristics, such as positive traits and behaviors [52]. This tendency is termed the self-enhancement bias or better-than-average effect (BTAE), which can be explained by motivational mechanisms [53]. People are motivated to possess a positive self-concept to maintain their self-esteem. This cognitive self-enhancement bias has been documented across many socially valued dimensions [53][54][55].

However, to our knowledge, there are a few studies on self-enhancement bias related to pro-environmental behaviors [56]. Bergquist [57] found that people perceive themselves as more pro-environmental than others in terms of conserving energy, recycling, and so on. Nevertheless, little direct evidence indicates whether self-enhancement bias exists for the domain of waste separation in the context of mandatory and voluntary policies. According to prior studies [56][57], we predicted that people assess themselves as more likely to sort waste than others in both *mandatory* and *voluntary conditions* and to hold a more positive attitude toward waste separation than others.

Taken together, the following hypotheses are proposed.

Hypothesis 1a:

A mandatory policy with supervision increases the likelihood of engaging in waste separation behavior.

Hypothesis 1b:

Both voluntary policy and no-implementation policy conditions cannot facilitate engagement in waste separation behavior.

Hypothesis 2:

People perceive themselves as more engaged in waste separation behavior than others.

Hypothesis 3:

People perceive themselves to hold a more positive attitude toward waste separation than others.

4. The Present Studies

Age is considered as an important factor that influences people's perception and implementation of policies on waste separation [58][59][60][61]. Although previous research has demonstrated that children take a strong stance toward protecting the natural environment, it was found that adolescents engage less in pro-environmental behaviors [58]. Adolescents are an important population to target with pro-environment behaviors [59]. Not only are adolescents high consumers of natural resources, but they are also the adult consumers of the future [60]. Therefore, policies targeting the pro-environmental behavior of adolescents were implemented on a national level in many countries [61]. Adolescents can acquire information via formal education or by participating in environmental education programs (e.g., waste separation), and they can radiate waste separation behavior in their families. Thus, we explored the effectiveness of mandatory policies and self-enhancement bias for both adults (residents) and adolescents (see **Table 1**).

Table 1. Research framework and designs.

	Policy			Person		Participants	Sample Size
	Mandatory	Voluntary	No-Implementation	Self	Others		
Study 1	√	√	×	√	√	Residents	240
Study 2	√	√	√	√	√	Residents	349
Study 3	√	√	×	√	√	Adolescents	121

References

1. World Bank. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. 2018. Available online: <https://www.worldbank.org/en/news/infographic/2018/09/20/what-a-waste-20-a-global-snapshot-of-solid-waste-management-t-o-2050> (accessed on 22 November 2021).
2. Knickmeyer, D. Social factors influencing household waste separation: A literature review on good practices to improve the recycling performance of urban areas. *J. Clean. Prod.* 2020, 245, 118605.

3. Minelgaitė, A.; Liobikienė, G. The problem of not waste sorting behaviour, comparison of waste sorters and non-sorters in European Union: Cross-cultural analysis. *Sci. Total. Environ.* 2019, 672, 174–182.
4. Stoeva, K.; Aliksson, S. Influence of recycling programmes on waste separation behaviour. *Waste Manag.* 2017, 68, 732–741.
5. Byrne, S.; O'Regan, B. Attitudes and actions towards recycling behaviours in the Limerick, Ireland region. *Resour. Conserv. Recycl.* 2014, 87, 89–96.
6. Matsumoto, S. Waste separation at home: Are Japanese municipal curbside recycling policies efficient? *Resour. Conserv. Recycl.* 2011, 55, 325–334.
7. Saphores, J.-D.M.; Nixon, H. How effective are current household recycling policies? Results from a national survey of U.S. households. *Resour. Conserv. Recycl.* 2014, 92, 1–10.
8. Mmereki, D.; Baldwin, A.; Li, B. A comparative analysis of solid waste management in developed, developing and less developed countries. *Environ. Technol. Rev.* 2016, 5, 120–141.
9. Miliute-Plepiene, J.; Hage, O.; Plepys, A.; Reipas, A. What motivates households recycling behaviour in recycling schemes of different maturity? Lessons from Lithuania and Sweden. *Resour. Conserv. Recycl.* 2016, 113, 40–52.
10. Ren, S.; Li, X.; Yuan, B.; Li, D.; Chen, X. The effects of three types of environmental regulation on eco-efficiency: A cross-region analysis in China. *J. Clean. Prod.* 2018, 173, 245–255.
11. Cleveland, M.; Robertson, J.L.; Volk, V. Helping or hindering: Environmental locus of control, subjective enablers and constraints, and pro-environmental behaviors. *J. Clean. Prod.* 2020, 249, 119394.
12. He, C.; Fu, Y. Why does waste separation policy vary across different Chinese cities? A configurational analysis of the pilot scheme. *J. Clean. Prod.* 2021, 283, 124613.
13. He, Y.; Kitagawa, H.; Choy, Y.; Kou, X.; Tsai, P. What Affects Chinese Households' Behavior in Sorting Solid Waste? A Case Study from Shanghai, Shenyang, and Chengdu. *Sustainability* 2020, 12, 8831.
14. Konold, D.; Schwietering, T. The Great Discrepancy: Political Action, Sustainable Development and Ecological Communication. *Politics Gov.* 2021, 9, 131–140.
15. Abbott, A.; Nandeibam, S.; O'Shea, L. Explaining the variation in household recycling rates across the UK. *Ecol. Econ.* 2011, 70, 2214–2223.
16. Zhao, L.; Zou, J.; Zhang, Z. Does China's municipal solid waste source separation program work? Evidence from the spatial-two-stage-least squares models. *Sustainability* 2020, 12, 1664.
17. Meng, X.; Tan, X.; Wang, Y.; Wen, Z.; Tao, Y.; Qian, Y. Investigation on decision-making mechanism of residents' household solid waste classification and recycling behaviors. *Resour. Conserv. Recycl.* 2019, 140, 224–234.
18. Lin, B.; Guan, C. Determinants of household food waste reduction intention in China: The role of perceived government control. *J. Environ. Manag.* 2021, 299, 113577.
19. Zheng, J.; Ma, G.; Wei, J.; Wei, W.; He, Y.; Jiao, Y.; Han, X. Evolutionary process of household waste separation behavior based on social networks. *Resour. Conserv. Recycl.* 2020, 161, 105009.
20. Li, W.; Jin, Z.; Liu, X.; Li, G.; Wang, L. The impact of mandatory policies on residents' willingness to separate household waste: A moderated mediation model. *J. Environ. Manag.* 2020, 275, 111226.
21. Deng, J.; Xu, W.-Y.; Zhou, C.-B. Investigation of waste classification and collection actual effect and the study of long acting management in the community of Beijing. *Chin. J. Environ. Sci.* 2013, 34, 395–400.
22. Zhang, W.; Che, Y.; Yang, K.; Ren, X.; Tai, J. Public opinion about the source separation of municipal solid waste in Shanghai, China. *Waste Manag. Res.* 2012, 30, 1261–1271.
23. Fan, B.; Yang, W.; Shen, X. A comparison study of 'motivation–intention–behavior' model on household solid waste sorting in China and Singapore. *J. Clean. Prod.* 2019, 211, 442–454.
24. Hao, M.; Zhang, D.; Morse, S. Waste separation behaviour of college students under a mandatory policy in China: A case study of Zhengzhou city. *Int. J. Environ. Res. Public Health* 2020, 17, 8190.
25. ElHaffar, G.; Durif, F.; Dubé, L. Towards closing the attitude-intention-behavior gap in green consumption: A narrative review of the literature and an overview of future research directions. *J. Clean. Prod.* 2020, 275, 122556.
26. Timlett, R.; Williams, I. Public participation and recycling performance in England: A comparison of tools for behaviour change. *Resour. Conserv. Recycl.* 2008, 52, 622–634.
27. Xu, L.; Ling, M.; Wu, Y. Economic incentive and social influence to overcome household waste separation dilemma: A field intervention study. *Waste Manag.* 2018, 77, 522–531.

28. Nordhaus, W. Climate clubs: Overcoming free-riding in international climate policy. *Am. Econ. Rev.* 2015, 105, 1339–1370.
29. Olson, M. *The Logic of Collective Action: Public Goods and the Theory of Groups*; Harvard University Press: Cambridge, MA, USA, 1965.
30. Ostrom, E. Collective action and the evolution of social norms. *J. Econ. Perspect.* 2000, 14, 137–158.
31. Keizer, K.; Lindenberg, S.; Steg, L. The spreading of disorder. *Science* 2008, 322, 1681–1685.
32. Tam, K.-P.; Chan, H.W. Generalized trust narrows the gap between environmental concern and pro-environmental behavior: Multilevel evidence. *Glob. Environ. Chang.* 2018, 48, 182–194.
33. Abrahamse, W.; Steg, L. Social influence approaches to encourage resource conservation: A meta-analysis. *Glob. Environ. Chang.* 2013, 23, 1773–1785.
34. Aitken, C.; Chapman, R.; McClure, J. Climate change, powerlessness and the commons dilemma: Assessing New Zealanders' preparedness to act. *Glob. Environ. Chang.* 2011, 21, 752–760.
35. López-Gamero, M.D.; Molina-Azorín, J.F.; Claver-Cortés, E. The potential of environmental regulation to change managerial perception, environmental management, competitiveness and financial performance. *J. Clean. Prod.* 2010, 18, 963–974.
36. Jiang, Z.; Wang, Z.; Li, Z. The effect of mandatory environmental regulation on innovation performance: Evidence from China. *J. Clean. Prod.* 2018, 203, 482–491.
37. Finnveden, G.; Ekvall, T.; Arushanyan, Y.; Bisailon, M.; Henriksson, G.; Östling, U.G.; Söderman, M.L.; Sahlin, J.; Stenmarck, Å.; Sundberg, J.; et al. Policy instruments towards a sustainable waste management. *Sustainability* 2013, 5, 841–881.
38. Ogiri, I.A.; Sidique, S.; Abu Talib, M.; Abdul-Rahim, A.S.; Radam, A. Encouraging recycling among households in Malaysia: Does deterrence matter? *Waste Manag. Res.* 2019, 37, 755–762.
39. Ye, Q.; Anwar, M.A.; Zhou, R.; Asmi, F.; Ahmad, I. China's green future and household solid waste: Challenges and prospects. *Waste Manag.* 2020, 105, 328–338.
40. Jiang, P.; Van Fan, Y.; Zhou, J.; Zheng, M.; Liu, X.; Klemesš, J.J. Data-driven analytical framework for waste-dumping behaviour analysis to facilitate policy regulations. *Waste Manag.* 2020, 103, 285–295.
41. Hou, J.; Jin, Y.; Chen, F. Should waste separation be mandatory? A study on public's response to the policies in China. *Int. J. Environ. Res. Public Health.* 2020, 17, 4539.
42. Trilling, C.; Gibbs, J.P. Crime, punishment, and deterrence. *Southwest. Soc. Sci. Q.* 1968, 48, 515–530.
43. Carlsmith, K.M.; Darley, J.M.; Robinson, P.H. Why do we punish? Deterrence and just deserts as motives for punishment. *J. Pers. Soc. Psychol.* 2002, 83, 284–299.
44. Pogarsky, G.; Piquero, A.R.; Paternoster, R. Modeling change in perceptions about sanction threats: The neglected linkage in deterrence theory. *J. Quant. Criminol.* 2004, 20, 343–369.
45. D'Amato, A.; Mazzanti, M.; Nicolli, F.; Zoli, M. Illegal waste disposal: Enforcement actions and decentralized environmental policy. *Socio-Econ. Plan. Sci.* 2018, 64, 56–65.
46. Zelenika, I.; Moreau, T.; Zhao, J. Toward zero waste events: Reducing contamination in waste streams with volunteer assistance. *Waste Manag.* 2018, 76, 39–45.
47. Hottle, T.A.; Bilec, M.M.; Brown, N.R.; Landis, A.E. Toward zero waste: Composting and recycling for sustainable venue based events. *Waste Manag.* 2015, 38, 86–94.
48. Lin, Z.Y.; Wang, X.; Li, C.J.; Gordon, M.P.R.; Harder, M.K. Visual prompts or volunteer models: An experiment in recycling. *Sustainability* 2016, 8, 458.
49. Kwan, V.S.Y.; John, O.P.; Kenny, D.A.; Bond, M.H.; Robins, R.W. Reconceptualizing individual differences in self-enhancement bias: An interpersonal approach. *Psychol. Rev.* 2004, 111, 94–110.
50. Festinger, L. A Theory of Social Comparison Processes. *Hum. Relat.* 1954, 7, 117–140.
51. Corcoran, K.; Crusius, J.; Mussweiler, T. Social comparison: Motives, standards, and mechanisms. In *Theories in Social Psychology*; Chadee, D., Ed.; Wiley-Blackwell: New York, NY, USA, 2011; pp. 119–139.
52. Sedikides, C. On the doggedness of self-enhancement and self-protection: How constraining are reality constraints? *Self Identity.* 2020, 19, 251–271.
53. Zell, E.; Strickhouser, J.E.; Sedikides, C.; Alicke, M.D. The better-than-average effect in comparative self-evaluation: A comprehensive review and meta-analysis. *Psychol. Bull.* 2020, 146, 118–149.

54. Heck, P.R.; Krueger, J.I. Self-enhancement diminished. *J. Exp. Psychol. Gen.* 2015, 144, 1003–1020.
55. Roy, M.M.; Liersch, M.J. I am a better driver than you think: Examining self-enhancement for driving ability. *J. Appl. Soc. Psychol.* 2013, 43, 1648–1659.
56. Leviston, Z.; Uren, H.V. Overestimating one's "green" behavior: Better-than-average bias may function to reduce perceived personal threat from climate change. *J. Soc. Issues.* 2020, 76, 70–85.
57. Bergquist, M. Most people think they are more pro-environmental than others: A demonstration of the better-than-average effect in perceived pro-environmental behavioral engagement. *Basic Appl. Soc. Psychol.* 2020, 42, 50–61.
58. Krettenauer, T. Pro-environmental behavior and adolescent moral development. *J. Res. Adolesc.* 2017, 27, 581–593.
59. Žukauskienė, R.; Truskauskaitė-Kunevičienė, I.; Gabė, V.; Kaniušonytė, G. "My words matter": The role of adolescents in changing pro-environmental habits in the family. *Environ. Behav.* 2021, 53, 1140–1162.
60. Bell, B.T.; Toth, N.; Little, L.; Smith, M. Planning to save the planet: Using an online intervention based on implementation intentions to change adolescent self-reported energy-saving behavior. *Environ. Behav.* 2016, 48, 1049–1072.
61. Jovarauskaitė, L.; Balundė, A.; Truskauskaitė-Kunevičienė, I.; Kaniušonytė, G.; Žukauskienė, R.; Poškus, M.S. Toward reducing adolescents' bottled water purchasing: From policy awareness to policy-congruent behavior. *SAGE Open* 2020, 10, 1–12.

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