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Recycling as a large-scale collective action dilemma: A cross-country study on trust and reported recycling behavior

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ABSTRACT

Household recycling contributes to environmental sustainability goals by limiting the extraction of natural resources. Previous literature has mapped out several factors, mainly at the individual level, that tend to increase individuals' tendencies to recycle. Inherent features of household recycling, however, suggest that a large-scale collective action framework should be relevant when analyzing this activity, meaning that trust, especially *institutional trust,* should increase recycling frequency. This paper consequently does four things: First, it examines whether institutional trust is linked to individuals' tendencies to report recycling; second, it tests the role of *generalized trust* for reported recycling behavior; third, it looks at the relationship between institutional quality at the country level and reported recycling behavior; and fourth, the paper provides a new theoretical approach to test the link between trust and behavior, which is hypothesized to result in a positive relationship between institutional trust and recycling behavior but with a negative relationship among the most trusting individuals (i.e. a curvilinear overall relationship). Support is found for a positive link between generalized trust, institutional trust, and *institutional quality* as a country-level factor on reported household recycling. However, we find no support for a curvilinear relationship. Findings imply that institutional trust has a role to play in household recycling, but this relationship should benefit from further examination.

1. Introduction

Globally, coming to terms with excessive waste pollution is critical for the aim of reaching the goals of sustainable resource management (UNEP, 2015). This implies a need to increase recycling by individuals. However, this is easier said than done. Recycling at the household level is associated with costs (e.g. it is time consuming) that incentivize individuals to avoid cooperation, i.e., adopting a free-rider behavior rather than choosing to recycle. Using a collective action framework recognizing scale and particularly number of actors as a factor effectively preventing cooperative behaviour, we highlight important difficulties societies face in their attempts to increase recycling levels, since household recycling in most modern societies typically involves a large number of actors. The more actors involved, the more the demand for a third-party enforcer (e.g. the state) to coordinate and facilitate action (Mansbridge, 2014; Olson, 1965). Previous literatureon both small- and large-scale collective action dilemmas shows that trust is a key aspect for increasing collective action. Actors are more likely to find cooperative solutions to problems if they trust each other (Ostrom, 1998). However, besides the extensively explored links between so-called generalized trust (i.e. trust in other individuals) and large-scale environmental cooperation (Sønderskov and Mannemar, 2009; Fairbrother, 2016), it can also be argued that institutional trust (i.e. trust in public institutions) is important for cooperative behavior in such situations (Harring, 2013). The underlying mechanism for such a positive link is that citizens are more willing to make individual sacrifices if they believe that an external authority has the capacity to ensure that each involved actor will do his or her part, e.g., by providing necessary infrastructure and by monitoring individual actors' behavior (Mansbridge, 2014).

Building on previous findings on collective action behavior, we test the link between institutional quality and trust on individual self-reported recycling behavior. The state plays a significant role in the collective action dilemma of recycling through its provision of recycling stations and responsibility for processing the collected waste, implying that institutional quality should influence citizens' tendencies to recycle, not only through direct trust in public institutions (institutional trust) but also through trust in other citizens and households (generalized trust). For example, institutional quality can be a guarantee for other individuals' cooperative behavior if authorities can punish those who do not cooperate.

However, we challenge this rather established large-scale collective action rationale by elaborating and testing an alternative theoretical route, suggesting that institutional trust at its highest levels could affect cooperation negatively. This means a hypothesized curvilinear relationship between institutional trust and self-reported recycling

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behavior. The mechanism behind such a link is that trust in public institutions, beyond a certain (high) level, makes an individual's own contribution appear as more or less unnecessary, since the state is assumed to take care of the waste regardless of individual activity, thus resulting in non-cooperative behavior out of passivity or rational calculation. Consequently, the aim of this study is to investigate the relationship between institutional trust and generalized trust and stated recycling behavior, and to look for a curvilinear relationship between institutional trust and recycling behavior in a cross-national setting. Cross-country micro data allows us to explore both these relationships.

The remainder of this paper is structured as follows: Section 2 briefly introduces recycling as a sustainability and collective action problem, presents previous findings and then theorizes and hypothesizes the relationship between trust and recycling behavior. Section 3 accounts for data and design, Section 4 presents the results of the analysis. We discuss our findings in Section 5 and we sum up our results in the concluding Section 6.

2. On prospects for individuals' voluntary recycling behaviour

The September 2015 UN sustainable development agenda includes goals of responsible consumption and production, sustainable forest management and the halt of biodiversity loss, all of which accentuate a widespread concern regarding scarce natural resources and the importance of sustainable resource management (UNEP, 2015). Household recycling of materials such as wood, paper, glass and plastics is a crucial part of the plan by limiting the extraction of new natural resources. For example, in 2014, household waste represented over 8 percent of total waste generated within EU countries (Eurostat, 2016).

Successful recycling of household waste hinges upon extensive voluntary efforts of individual citizens in their private spheres. A number of studies aimed at identifying factors associated with high levels of individual recycling have identified personal characteristics such as moral motives, pro-environmental attitudes and knowledge as important (Hage et al., 2008; Kelly et al., 2006; Hornik et al., 1995). Usage of economic incentives also has been proven to generate positive effects (Hage et al., 2008; Yau, 2010). Crociata et al. (2015) found a positive correlation between levels of cultural consumption (e.g. weekly newspaper reading and theater attendance) and stated recycling behavior. In most cases, however, the sacrifice associated with recycling does not generate any direct beneficial outcomes for the individual, economic or otherwise. What is more, the contribution of co-citizens cannot be guaranteed, with the implication that one's own contribution will not necessarily contribute to an overall successful result. In light of these features, incentives for citizens to make the effort of recycling their waste should be absent or modest, emphasizing the inherent collective action dilemma in recycling.

2.1. Recycling as a collective action problem

With a collective action approach to recycling, it is clear that societies may face a challenge in working towards recycling objectives and that aggravating factors are not isolated exclusively at the individual level. Public institutions can take measures to increase the likelihood of individual contribution – that is, extensive establishment of recycling stations or information campaigns. The final result, however, should still be affected by individual decisions in light of the dilemma situation.

The social or collective action dilemma is a familiar puzzle within the social sciences. Dawes defines such a dilemma as a situation where "(a) the social payoff for each individual for defecting behaviour is higher than the payoff for cooperative behaviour, regardless of what the other society members do, yet (b) all individuals in the society receive a lower payoff if all defect than if all cooperate" (Dawes, 1980, 170). A basic premise in the collective action dilemma is that a group would be better off in the long run through cooperative behavior. However, when a contribution to the group interest is associated with a short-term cost, it creates an incentive for the individual *not* to cooperate – and particularly so if the contribution of others cannot be guaranteed. Consequently, there is a risk that nobody contributes to the production or sustainment of the joint resource or some other good.

Environmental problems and natural resource depletion are often the prime examples of large-scale collective action problems. For example, in the case of combating climate change, the collective benefits of one individual reducing his or her emissions through a changed behavior today, will not be visible until several generations in the future – if ever. In addition, cooperation in this case is to a large extent dependent on private sacrifices that require less consumption or changed travel patterns. However, not all contributions to environmental dilemmas could reasonably be labeled pure "sacrifices." Only some probably would regard reducing car emissions by commuting to work by train as an individual sacrifice. Others would rather see the commuting as a benefit, by appreciating the comfort and the economic benefits that train commuting brings. Thus, pro-environmental behavior should not automatically be considered an intentional contribution to the common good, since not all such behavior involves a clear element of sacrifice. For example, as demonstrated by Sønderskov and Mannemar (2009), a decision to buy organic fruit should not be dependent on others' decisions to do so.

Recycling, on the other hand, appears closer to a pure case of large-scale collective action, being both more time-consuming and more tedious compared to throwing all waste in the trash can. In a study on Swedish citizens, 75 percent of the respondents reported that they recycle for environmental reasons compared to economic (5 percent), practical (14 percent) and health-related (3 percent) motives (Jagers et al., 2016). What is more, recycling as a behavior can be kept relatively private. Recycling should thus be less vulnerable to social norms and social punishment compared to many other behaviors performed more publically (March and Olsen, 1989; Helmke and Levitsky, 2004; Scholz and Pinney, 1995). Previous findings on the relationship between social norms and recycling rates support this notion. While there is some evidence that social pressure from family and friends may increase an individual's recycling level, the simultaneous effects of general social norms and influence from neighbors are quite limited (Bratt, 1999; Shaw, 2008).

2.2. Trust and collective action

For collective action and cooperation to take place in small groups, it has been found that interpersonal trust and reciprocity among group members is crucial (Sally, 1995; Fischbacher et al., 2001; Ostrom and Walker, 2003; Gächter et al., 2004; Milinski et al., 2002; Nowak and Sigmund, 2005; Gächter and Hermann, 2009). For large-scale collective action problems, where actors are typically anonymous, trust in others increases cooperation in the form of generalized trust, that is, actors' trust in other people in general (Sønderskov and Mannemar, 2009; Rönnerstrand, 2015; Jones et al., 2010).[1]

However, an increasing group size does obstruct the extent to which contributions can be coordinated, often resulting in the introduction of a third party, typically the state, with the authority to impose coercive arrangements in order to facilitate cooperation (Mansbridge 2014). For problems addressed at the national level, such arrangements imply elements of state intervention and policy. Potential measures include regulation and the introduction of market-based instruments (for an overview, see Sterner and Coria, 2012). With the introduction of a third party, the reputation and trustfulness of the intervenor become central for the outcome of the dilemma. As a result, political or *institutional*

[1] The standard way to measure generalized trust levels is by asking respondents if "most people can be trusted or if you can't be too careful in dealing with people," on a seven- or eleven-point scale.