Pre-Review version

Information with a smile – does it increase recycling?

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Abstract

This work investigates the impact of human-human interaction on a target behaviour change by comparing the effect of programme delivery of a fixed set of tailored information via proximate but trivial interaction between subjects and volunteers, a set of well- produced single-topic colour leaflets, and a control on behaviour in a real world setting. The behaviour targeted was householder sorting of food waste into specialised bins in high-rise apartment buildings in Shanghai, China, measured by discreet direct daily weighing of waste fractions. The unit of analysis was the set of households in each building. Two versions of the volunteer delivery were trialled: one neutral in tone and action, and the second slightly positive in tone and action. Despite the existence of tens of theories about behaviour change and hundreds of empirical case studies of pro-environmental behaviour change programs, human-human interaction is not mentioned as a predictor and is only rarely as possibly moderating subsequent conduct. Results suggest that that human-human interaction is not likely to be a key explanatory factor but that a positive human-human interaction may be an important factor. Furthermore, these effects were observed when the six social influence mechanisms suggested in current behaviour theory were eliminated, suggesting new mechanisms need to be proposed. For practitioner waste managers the results indicate that funding programmes with human interaction may not be sufficient for greater results: the humans may need training for positive interaction. In addition, the results indicate that currently held opinions by theorists and practitioners on the relative usefulness of tailored information may need

revising, since most compound it with human interaction. Explanatory studies are thus called for at programme and individual levels.

1. Introduction

While many factors are reported as being important for consideration in behaviour change programs, human-human interaction is rarely mentioned. For example, a review of approaches identified 17 theories involving 128 constructs (Michie et al., 2005), while another review of empirical studies identified forty factors associated with recycling behaviour (Gordon, 2014). Neither of these reviews reported mention of human-human interaction.

An important exception, a random-effects meta-analysis with a sample of 29 studies across different target behaviours in resource conservation, found that social influence approaches were effective when compared to a control group and, with a smaller effect size, when compared to the use of another intervention strategy such as communication or feedback (Abrahamse et al., 2005). They identified six social influence approaches from social influence theories and principles (such as social norms, social learning, and social comparison) which might account for it (Cialdini, 2003), namely: (i) the use of block leaders and social networks, (ii) public 'pledges' or commitment making, (iii) modelling of the behaviour, (iv, v, vi) the use in feedback provision of social norms, social comparison, and group performance. This random-effects meta-analysis suggested that face-to-face interaction and communication might be general mechanisms that strengthen social influence such as these, and that any such potential mediators should be studied further.

Keeping in mind all these factors reported in different fields, the authors turned to a pragmatic problem of interest to them - behaviour change for recycling - and carried out a series of medium-scale field studies to systematically investigate what factors of behaviour change programs were key to their success. This was done by using housing compounds as ‘living labs’ where hundreds of households in a contained community (walled and gated) with their own internal, dedicated domestic waste stations could be studied independently, using bespoke interventions (Dai et al., 2015; Dai et al., 2016; Lin et al., 2016; Xu et al., 2016) that fell within the range of conditions normally encountered by apartment dwellers. This paper, reporting on the fifth set of interventions, focusses on a test of the impact of proximate and trivial human-human interaction on behaviour change in natural but constrained and controlled conditions.

The practical motivation for this study is an urgent and very large-scale need to reduce the food waste component of residential waste going to landfill or incineration in the metropolis of Shanghai in particular (population 24 million) and in the world generally (Hoornweg and Bhada-Tata, 2012; SMPEB, 2016). Household separation of food waste shares many similar behaviour change issues as other household recycling. There are many theories relating to pro-environmental behaviour, and each necessarily limits the number of factors under its consideration to make analysis manageable. Any truly ‘complete’ model would be unwieldy from the large number of parameters (Jackson, 2005), so the ‘most relevant’ simplified sub-models are generally chosen for given situations and then extended if necessary to take into account further factors later established to be significant. Unfortunately, this approach is not very useful for predicting or designing pro-environmental behaviour change programs: links to theories are usually made retrospectively, if at all (Davies et al., 2002). An article in *Science* suggested that there is a need for a swathe of intermediate-scale research, with more concerted efforts by researchers to work in tandem with policy makers and business, to do the bridging work needed to translate the insights from behaviour science into scaled interventions which are effective (Allcott and Mullainathan, 2010). This work addresses that call by building on a knowledge of constructs from the theories but remaining grounded in a series of studies in real-life ‘living labs’ of gated residential housing compounds in modern Shanghai (which are the norm throughout Shanghai and not a sign of affluence). The cumulative learning specifically relevant to this work is outlined below.

Our first study showed that food waste segregation schemes in 5,000 communities (circa 5 million households) in Shanghai in which the government relied on an information-only strategy delivered through local community government via written information and block leader dissemination failed, while schemes organised by a non-governmental organization in 40 communities involving volunteer activities (in collaboration with the local community government) were successful and showed positive results even up to three years later (Dai et al., 2016). Our second study was an in-depth theory building case study undertaken in one of those latter communities.

This case-study suggested that role clarification, perceived seriousness of the message, and personal interactions with the residents by the volunteers may be very relevant (Xu et al., 2016) while prompting, and modelling may be somewhat relevant via stimulating emotion and social influence. For practitioners, the results implied that the involvement of volunteers in this way made significant contributions to recycling success. In terms of theoretical constructs, it implied that the influencing factors were complex.

Our third study attempted to identify those aspects of volunteer involvement that were especially important in order to link to theory and to aid planners in optimising their intervention designs – in particular with respect to costs of involving volunteers. This experimental study used direct measures of behaviour change (weights of the food waste properly sorted) under three conditions: having a cheerful (positive) volunteer model behaviour near the bins for two hours a day; having a brightly decorated clean bin (to contribute to prompting and emotion); and a control with neither (Lin et al., 2016). Subsequent interviews with participants suggested that the brightly coloured clean bin provided some of the prompting and emotion effects of the volunteers, but volunteers increased householders' skill (through their modelling of how to deposit the waste), altered emotion, and had social influences. For practitioners a result was that brightly painted clean bins can only partially substitute for volunteers, but for theorists it was not yet clear why this was so (in terms of constructs from theories). A better understanding might allow improved design.

Our fourth study sought to reduce the social influences involved by using volunteers who were not at all known to the householders, who did not display any judgement with respect to sorting behaviour, who only provided straightforward information on a very narrowly defined topic and who did not model the target behaviour. Outcome measures for this study were both knowledge changes (measured by questionnaires), and behaviour, measured by weighing the waste fractions (Dai et al., 2015). In this study student volunteers delivered tightly scripted information by door-stepping all householders in the gated community. Door-stepping is a commonly used approach in recycling programs where staff knock on doors to provide program-relevant information to householders. This study showed a significant increase in correct waste sorting but no increase in knowledge. Follow-up interviews suggested that the face-to-face interaction was key to the effect of the door-stepping, implicating the emotion and social influences. Again, the results indicated that the (costly) physical presence of the volunteers was operationally indispensable for the behaviour change.

The results from the four ‘living lab’ studies above, and the new perspectives they threw up with in related psychology work (theory-based) and waste management (practice based), suggested the need for a specific study to determine whether personal interaction might be a driving, key explanatory factor and not a minor, mediating one. The operational implications were great: city-wide recycling programs would be costly if human elements could not be replaced. The field experiment reported in this paper was, thus, designed to contribute to both of these theory and practice-based concerns. It is an experiment which compares a condition of human-human interaction (mitigated for the six previously proposed social influences to isolate human-human interaction and including a variation regarding emotion) against a theoretically equivalent operationally cheaper alternative (tailored information leaflets), using direct measures of behaviour; baselines; controls; and random allocation of buildings to conditions. The aim was achieved but the result was unexpected.

2. Research Design and Methods

The cleanest scenario for the field experiment was determined to be information delivery. The study would mitigate the six forms of social influence identified by theory-based psychology by using volunteers who are not known to the householders, who have no motivation to judge subject behaviour, who do not even intimate any requests for commitments, who do not use modelling or feedback or social comparison of any kind; and to locate the study in a community where the program was well established so local norms were controlled for. To control for factors known in waste management, the source or authority of the message and the status of the (volunteer) messenger would be the same. To control more carefully for emotion, the experiment would include two conditions for the volunteers: one who was neutral in tone and action, and one who was slightly positive. Although this construct has not often been considered explicitly in recycling studies, anecdotal mention has been made of the contribution of tone to success e.g. in a study using “young, enthusiastic door-steppers” (Read, 1999).

A further dimension which needed to be considered in the experimental design was the level of tailoring of the information to be delivered, as tailoring has been proposed as a contributor to more successful behaviour change programs (Abrahamse et al., 2005). In fact, most studies of tailoring also involve personal interaction, but without it being mentioned as a possible contributor. Our worry was that our attempts to isolate interpersonal interaction would inadvertently also involve higher tailoring of information via the 1-to-1 interaction. Thus, the information dispensed to the householders was controlled for content and degree of tailoring through careful training of the volunteers.

In keeping with our pragmatic approach, the unit of analysis was sets of households in a given high-rise building, which is a typical unit in waste management practice as it has specific engagement channels and waste depositing areas. Thus, the experiments and conditions are for groups, not individuals. This allow conclusions applicable for pro-environmental programme delivery, not directly for psychology of individuals.

An application to the appropriate Ethics Committee of Fudan University resulted in confirmation that this research did not require further ethics approval.

2.1 Choice of site

A site was chosen which facilitated the maximum control of all of these factors. It had 23 high-rise buildings, each with 80-120 households and a building-specific waste station very close to the main doors, which meant information could be efficiently and consistently provided to householders specific to each building. In all buildings an identically designed and executed food waste recycling program had been ongoing for 11 months, with promotion posters in each building and new ‘food waste’ bins placed alongside ‘residual’ waste bins, appropriately labelled. Awareness levels and behaviour levels were, thus, stabilized. In our study the unit of assessment was a building, with the waste from all bins separated into food and non-food fractions by hand and weighed daily, before and after our intervention. Our measurements were invisible to participants as they piggy-backed on the normal daily activity of local waste staff modified only by the oversight by researchers to ensure data validity. Buildings were randomly assigned to conditions, with two desired for each trial. As many of the remaining as possible would be used as controls, with a maximum of 13 buildings in total due to researcher staffing limitations.

The detailed intervention was then designed with respect to the specific chosen site. Trial 1 used single-topic information colour leaflets available from a large and obvious dispenser near the bins. Trials 2 and 3 had a volunteer, with no connection to the community, stationed at a table near the bins, with a sign saying “Food Waste Sorting Information - A Volunteer Service”. This volunteer was instructed to initiate interaction with passers-by in a natural manner by saying, “Hello, I am a volunteer for food waste sorting: if you have any related questions, I can help”. In Trial 2 the volunteer was instructed to speak and use body language of a neutral manner, and, with the sole exception of the identical engaging introductory statement, to only speak briefly in direct response to householder questions (i.e. neutral response). In Trial 3 the volunteer used a slightly positive tone and body language throughout. All volunteers were trained in the boundaries of their expected interactions, and the need for consistency throughout the experimental period. In Trial 2 and Trial 3 the waste information conveyed by the volunteers was restricted to precisely the same information found in the leaflets. The information found in leaflets was designed subsequent to a pre-study at another site that identified and responded to typical questions asked by residents. These questions were found to fall into four categories so one pamphlet was developed for each. In this manner all three trials were equipped with equivalent tailored information.

2.2 Measurement Methods

Many methods and indicators are used to study waste sorting and behaviour change. We did not collect self-reported data as this is known to be empirically unsound (Perrin and Barton, 2001; Williams and Kelly, 2003) and we were concerned about instrument effects. Rather, we collected objective data on waste quantities by weighing it.

Participation rates (Woodard et al., 2001), Capture Rate (CR) (WRAP, 2010), (also known as the Diversion Rate, or Source Separation Rate (Dahlén, 2005)) and Contamination Level (also known as the mis-sorting ratio or purity of recyclables

(Bernstad et al., 2013; Dahlén, 2005)) are measures often used, usually in combination, in order to fully characterise the field situation. In this study participation rates were not appropriate indicators, nor feasible without further human interaction. We opted for the stronger measures of Capture Rates (CR) and Contamination Levels (ContL) calculated directly from weights obtained from emptying out the waste in recycling and residual bins, and separating each into food waste and 'other' waste. This approach was possible by cooperating with local waste staff who already had established routines for collecting the waste, and did not cause any additional activities visible to the householders. The total waste produced by each building was processed in this way: no sampling was used.

The Food Waste Capture Rate (CR FW) was calculated as the ratio of successfully diverted food waste (food waste found in food waste bins) to all food waste generated (total food waste found in all waste bins). Researchers need to collect data of i) total weight of each bin and ii) separated weights of food waste, and non-food waste, in each bin:

$$\text{CR FW} = 100\% \times (\text{FW in food waste bins}) / (\text{total FW in all waste})$$

The Contamination Level (ContL) was calculated with the ratio of unsuccessfully diverted food waste (non-food waste found in the food waste bins) to all waste diverted (all waste found in food waste bins):

$$\text{ContL} = [100\% \times (\text{nonFW} / (\text{FW} + \text{nonFW}))]_{\text{recycling bins}}$$

Studies reporting food waste sorting often use incomparable measures and report findings inconsistently. Both hinder emergence of the common standards that support effective communication of the results achieved in tests to improve sorting. In a community with 75% food waste in unsorted waste, a ‘recycling’ bin might be reported to have ‘only 25% contamination’ when in fact it represented no sorting taking place. For this reason, we have developed the use of an Effective Capture Rate (Dai et al., 2015) which we calculate in this study in addition to both CR and ContL. It is denoted effCR:

effCR =βCR,

where β= (proportion of nonFW – ContL) / (proportion of nonFW),

and where (proportion of nonFW) = $[\text{ nonFW} / (\text{nonFW} + \text{FW})]_{\text{all bins}}$

The lower that ContL is, the closer the effCR value is to the CR value. For instance, there might exist a scenario where all of both waste is placed by accident into the food waste bins, giving a figure of 100% for the Capture Rate, with a contamination rate of 50% (if there are naturally equal amounts of food and non-food in the waste). Unless this contamination rate is compared to the natural ratio of the two fractions, it might not be noticed that, in fact, no sorting has taken place. But when using the effCR, this would bring β to zero, and give an Effective Capture Rate of 0.0. The effCR can be negative when the ContL is relatively high. However, even with a low CR like 10%, but a zero ContL, the effCR value will show a more true effect e.g. 10% in that case.

3. Results

Baseline direct measures of daily waste weights were obtained for 13 buildings, for two separate, consecutive days, which were then averaged (shown in Table S1). Previous field work indicated that the variation in daily results for domestic waste from a given source are more meaningful when examined as a rolling average over two consecutive days. Current thinking in pro-environmental behaviour in general and waste management in particular is that householder groups with very low rates, e.g. <8-10%, or exceptionally high ones, e.g. >50%, have fundamentally different underlying drivers (Abrahamse and Steg, 2013; DEFRA, 2013; Harder and Woodard, 2007) so should be examined separately. For example, they may be short-term renters, or eco-champions. While such groups were not anticipated in this community, we did not have the demographic information required to support guidance but we had directly measured baseline data. Examination of the baseline Effective Capture Rate values showed that none were exceptionally high, but two were very low and were excluded from further study, leaving 11 candidate buildings. These decisions are detailed in the Supporting Information.

Of the 11 buildings retained, one was used for an unrelated experiment, and the remaining 10 were randomly allocated to conditions for our experiment: two each for Trials 1,2,3 and four as controls. The interventions took place on a Saturday and Sunday, Days 9,10, to optimise the chances of making contact with the maximum number of householders in each building. Volunteers and leaflets were in place for 6 hours each day. Previous field experience suggested that householders take 2-4 days to begin to effectively execute intended changes, so post-intervention data was collected on Days 14,15. Unfortunately, one researcher became unexpectedly unavailable for Day 10, so the second of each Trial had to be abandoned half way through, making their post-data unusable. This left three Trial groups and four Controls. The bin-weight data and derived measures are summarised in Table 1, and the main indicators, the Effective Capture Rates, are presented clearly in Table 2.

Table 1.

Baseline and post–intervention measurements (kg) of food Waste (FW) and non-food waste (nonFW) in residual (Res) waste bins for the experimental conditions of Control, Leaflets, Neutral Volunteers and Positive Volunteers, and thus Contamination Levels (Cont.L), Capture Rates (CR) and Effective Capture Rates (effCR).

	Control #1	**Control #2**	**Control #3**	**Control #4**	**Trial 1 Leaflets**	**Trial 2 Neutral Volunteer**	**Trial 3 Positive Volunteer**
Baseline (Day 1)							
Total Waste	120.70	100.74	84.62	64.30	117.78	154.00	141.16
Total nonFW	64.47	55.04	46.54	35.72	56.18	69.00	65.74
Total FW	56.23	45.70	38.08	28.58	61.60	85.00	75.42
nonFW in Res bins	0.54	0.00	1.62	1.94	5.00	10.54	20.30
Total Waste in Res bins	8.40	1.04	6.02	8.56	28.06	37.22	44.82
Cont.L	6%	0%	27%	23%	18%	28%	45%
CR	14%	2%	12%	23%	37%	31%	33%
effCR	12%	2%	5%	13%	24%	14%	4%
β = 51%							
Baseline (Day 2)							
Total Waste	106.42	78.32	60.19	64.94	108.44	138.02	118.46
Total nonFW	58.86	39.88	28.29	38.20	56.18	63.32	58.84
Total FW	47.56	38.44	31.90	26.74	52.26	74.70	59.62
nonFW in Res bins	0.54	0.02	2.36	2.12	4.10	9.92	14.10
Total Waste in Res bins	5.26	5.54	11.44	12.64	13.66	34.74	42.68
Cont.L	10%	0%	21%	17%	30%	29%	33%
CR	10%	14%	28%	39%	18%	33%	48%
effCR	8%	14%	17%	26%	8%	15%	17%

β = 51%							
Post measurement (Day 14)							
Total Waste	130.94	109.80	52.80	77.34	129.30	169.06	130.72
Total nonFW	79.64	51.12	27.02	44.24	79.30	98.22	63.62
Total FW	51.30	58.68	25.78	33.10	50.00	70.84	67.10
nonFW in Res bins	0.08	0.00	1.64	5.60	4.34	11.58	8.18
Total Waste in Res bins	5.70	7.20	9.54	13.52	21.94	54.50	45.52
Cont.L	1%	0%	17%	41%	20%	21%	18%
CR	11%	12%	31%	24%	35%	61%	56%
effCR	11%	12%	21%	5%	22%	36%	37%
β = 53%							
Post measurement (Day 15)							
Total Waste	88.00	102.98	57.42	50.10	121.28	131.98	91.98
Total nonFW	49.64	51.62	25.88	27.30	60.06	68.72	45.06
Total FW	38.36	51.36	31.54	22.80	61.22	63.26	46.92
nonFW in Res bins	0.00	1.20	1.04	3.58	1.90	6.02	8.50
Total Waste in Res bins	8.66	9.92	9.82	12.86	21.06	25.30	33.18
Cont.L	0%	12%	11%	28%	9%	24%	26%
CR	23%	17%	28%	41%	31%	30%	53%
effCR	23%	13%	22%	19%	26%	17%	27%
β = 53%							

Table 2.

A summary of the Effective Capture Rate (%) and standard deviations at baseline and post-intervention across the experimental conditions, and its change.

Experiment condition	**Baseline**	**Post intervention**	**Change**
Control #1	10.11	16.62	6.51
Control #2	8.26	12.69	4.43
Control #3	11.38	21.49	10.10
Control #4	19.88	12.26	-7.61
Control Average	**12.41**	**15.76**	**3.36**
Control Standard deviation	**4.45**	**3.71**	**6.65**
Trial 1 leaflets	16.19	24.01	7.82
Trial 2 - Neutral Volunteer	12.17	26.53	14.36
Trial 3 - Positive Volunteer	11.55	31.96	20.41

These results indicate that Trial 1 (leaflets) had no impact on behaviour, that Trial 2 (neutral interactions) may have had a small impact but it was not significant, and that Trial 3 (positive interactions) had a significant impact on behaviour.

It should be noted that there are limited options for valid statistical treatment of this kind of data, and we are fully aware that this means our results can only be considered indicative, and that further, specialised, larger scale studies whose design support tests for statistical significance would be needed for explanatory conclusions. In operational terms, however, the design we used far exceeds the rigor found in normal program evaluations in medium scale recycling and are, as such, immediately useful.

With these limitations of the nature of the data in mind, we present the two figures below. Fig 1 shows a comparison of the changes in Effective Capture Rate for the trials against the controls. It supports the assertion that Trial 1 shows no meaningful effect (with values within an indicative, one standard deviation, of the control mean), Trial 2 a possible small effect (1-2 standard deviations of the control mean), and Trial 3 a meaningful effect (outside two standard deviations of the control mean), on the waste sorting behaviour. In the absence of multiple trial sets, Fig. 2 makes use of all available data which was not involved in any interventions (i.e. pre-data for all 13 buildings plus post-trial of the control groups) to illustrate the natural variation across the buildings. This is then compared with the experiment condition post-intervention results, which do not contradict the indications from Fig. 1 that T3 may have a meaningful effect.

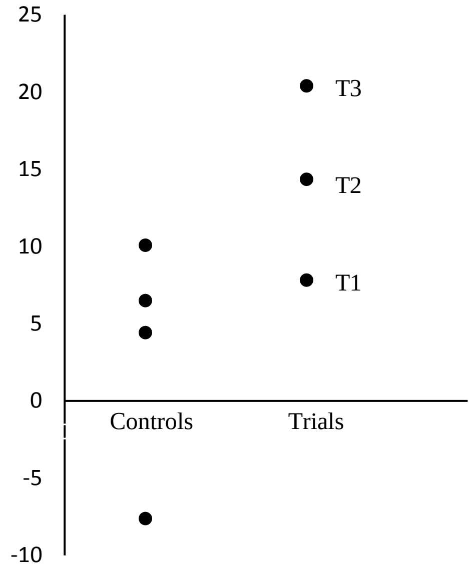

Fig. 1. A comparison of the % *changes* in Effective Capture Rate for the trials against the controls (leaflets, neutral and positive volunteers). The controls had mean of 3.36 and standard deviation of 6.65.

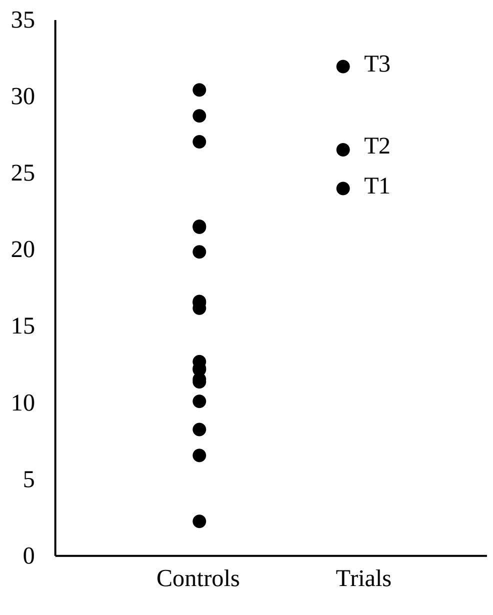

Fig. 2. A comparison of all available Effective Capture Rate (%) data which was not involved in any interventions (i.e. pre- data for all 13 buildings plus post-trial of the control groups), against the post-trial experimental data, indicating the relative

significance of Trials 1,2,3.

4. Discussion and Conclusions

This study was initiated because evidence suggests that human-human interaction might be a key explanatory factor in behaviour change rather than a minor mediating influence. The results indicate that that human-human interaction is not likely to be a key factor but that a *positive* human-human interaction may very well be an important factor in explaining behaviour change, and deserves further study.

A significant finding for social science-based studies is that none of the six social influence mechanisms suggested (Abrahamse and Steg, 2013) as possible pathways for impact from human-human (face-to-face) interactions appear to be in operation here, another must be proposed. That is because the experiment controlled for each: i) social networks were not activated as the volunteers had no connections with the householders, and the householder-volunteer interaction generally took place without other householders being present; ii) no public pledges were made or requested; iii) the volunteers did not model the behaviour in any way; and iv-vi) there was no provision of any feedback to the householders.

It seems likely that any future links to theory for the results indicated in this study will need to make connections between concepts in other fields beyond psychology, such as information and communication studies, sociology and social learning, because such fields might be more able to motivate a human-human interaction link to behaviour which is separate to currently considered social influences. Behaviour change theory might also need to be invoked as it places more emphasis on the role of interventions within the context with respect to separate phases in behaviour change, e.g. information which is new when awareness is low, versus a persuasion towards a change of intention, versus a reminder to act on intention.

As we found that human-human interactions have effects that are not correlated with tailoring, these two aspects should be considered separately in future studies. We know of no study where these two factors are separated: an example is work in social marketing where tailoring via segmentation is credited with the success, yet most studies reported involve additional face-to-face interaction(Mckenzie-Mohr, 2000). This result is also of relevance to researchers in the emerging fields of technology-based interventions, information provision, and gamification, which may benefit by separately considering these two in their work, which often blends technological and human-based interactions.

Finally, the findings for practice-based waste managers are important: sending humans out to deliver information is not in itself a prediction for improved success: those humans need to provide positive interactions, and this requires natural skills and/or training, both of which have cost implications.

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Appendix A

Workings to identify ‘outliers’ according to current models of pro-environmental and recycling behaviour

Baseline direct measures of daily waste weights were obtained for 13 buildings, two separate days averaged, as shown in Table S1. Current thinking in pro-environmental behaviour in general and waste management in particular is that householder groups with very low rates, e.g. <8-10%, or exceptionally high ones, e.g. >50%, have fundamentally different underlying drivers. (Abrahamse and Steg, 2013; DEFRA, 2013; Harder and Woodard, 2007) For example, they may be short-term renters passing through, or eco-champions. Such groups were not anticipated in this community, but demographics were not available for guidance. On the other hand, directly measured baseline data are considered a more rigorous indicator of their presence. Examination of the baseline effective Capture Rate values in Column 4 of Table A1 show that Building South 3 is exceptionally low. Building North 2 is near the threshold and worryingly has a near-zero value on one day. These were both considered sufficiently potentially representative of 'outlier' populations that those buildings were removed from the study. Building North 4 is borderline-low, and as the threshold is not a strict one, the decision to include or remove it is subjective. However, it was left in as other complications (a researcher becoming unavailable to complete the data collection) left us with a small number of buildings. The workings leading up to the final conclusions were re-worked with and without Building 6 and found not to change.

Table A1.

Baseline direct measures of daily waste weights for all 13 candidate buildings, for two consecutive separate days and averaged

	Day 1	Day 2	Average(Baseline)
North 1	12.25	7.97	10.11
North 2	0.04	13.09	6.56
North 3	24.62	7.75	16.19
North 4	2.25	14.26	8.26
North 5	5.58	17.52	11.55
North 6	9.34	15	12.17
South 1			30.43
South 2	5.58	17.19	11.38
South 3			2.25
South 4	13.08	26.67	19.88
South 5			21.54
South 6			28.74
South 7			16.54