

EREM 72/1

Journal of Environmental Research,
Engineering and Management
Vol. 72 / No. 1 / 2016
pp. 35-44
DOI 10.5755/j01.erem.72.1.14974
© Kaunas University of Technology

**A Field Experiment on Behavioural Effects of Humorous,
Environmentally Oriented and Authoritarian Posters against Littering**

Received 2016/02

Accepted after revision 2016/04

<http://dx.doi.org/10.5755/j01.erem.72.1.14974>

A Field Experiment on Behavioural Effects of Humorous, Environmentally Oriented and Authoritarian Posters against Littering

Ralph Hansmann

ETH Zurich (Swiss Federal Institute of Technology Zurich), Department of Environmental Systems Science (D-USYS), Transdisciplinarity Lab (TdLab), Zürich, Switzerland

Nora Steimer

IGSU (IG saubere Umwelt) (Interest Group for a Clean Environment), Zurich, Switzerland

Corresponding author: ralph.hansmann@env.ethz.ch

Hansmann, R., ETH Zurich, Department of Environmental Systems Science (D-USYS), Transdisciplinarity Lab (TdLab), ETH Zurich SOL F.7, Sonneggstrasse 33, CH-8092 Zürich, Switzerland

A humorous, an environmentally oriented and an authoritarian poster against littering were tested in a field experiment on their behavioural effectiveness. Corresponding slogans were placed on anti-littering posters designed for this study and used experimentally at four railway stations. The experimental design entailed 4 communication conditions including a control condition where no poster was presented. In each experimental run ($N = 96$), flyers were distributed for 30 minutes. The number of distributed flyers was counted, and the proportion of littered flyers was determined for each experimental run. It was found that the humorous and environmentally oriented posters achieved a reduction of 58% and 64%, respectively, in littering as compared with the control condition. The authoritarian poster was significantly less effective, but achieved a significant reduction of 25%. Considered together with some previous findings and theories, the results indicate that environmentally oriented and humorous anti-littering posters are more effective than authoritarian ones.

Keywords: *communication, authoritative, humour, reactance, littering.*

Introduction

The pollution of the environment through littering is a serious societal problem that causes high costs for cleaning up and degrades the aesthetic value of the natural environment and settlements. Ultimately, littering can reduce residential satisfaction and quality of life. In recent years, a continuing trend towards ever more consumption in public space, which is accompanied by an increasing pollution from littering, has been observed. Effective measures against littering are required (Berger *et al.*, 2008; Flury-Kleubler, 2004; Schultz *et al.*, 2013). A variety of such measures as, for example, the organisation of clean-up days, raising public awareness through campaigns using posters or TV spots, personal face-to-face communication of so-called anti-littering ambassadors, waste education in schools, intensification of public clean-up activities, and the introduction of fines for littering have been taken (Fehr *et al.*, 2014; Hansmann, 2012; Hansmann and Steimer, 2015). However, evaluation studies and experiments assessing the actual effects of such measures are necessary for their optimisation and to decide which measures have the highest effectiveness. Against this background, this field experiment analyses the effects of different types of anti-littering posters with reference to objective data about the littering behaviour of passers-by. Three posters, which implement different communication strategies, are compared with a control condition without posters. Thus, on the one hand, data on the effectiveness of the use of posters per se is gathered and, in addition, effects of three different communication styles, namely humorous, environmentally oriented and authoritative communication, are compared. The selection of these three styles of communication with posters was made in light of previous studies as described below. Posters play a major role in environmental campaigns for proper waste disposal and the study, thus, aims to contribute to the optimisation of efforts against littering.

Previous studies on anti-littering communication have shown that posters with friendly and positively worded slogans that ask, for example, to help maintaining cleanliness of the environment are more effective than slogans in a commanding tone (Durdan *et al.*, 1985; Geller *et al.*, 1976; Reich and Robertson, 1979). In a study

by Horsley (1988), the acceptance of a poster using rude speech against litterers was very low and adverse effects were observed. The low acceptance and effectiveness of authoritative placards observed in previous studies have usually been explained with reactance processes. According to Reactance Theory by Brehm (1966, 1972), people strive for behavioural freedom and want to decide on their values, behavioural norms and behaviours for themselves. Commanding communication threatens personal freedom and can, thus, trigger behaviours which directly or indirectly oppose the social pressure that is exerted. Reactance can, thus, prevent the adoption and internalisation of anti-littering norms if they are communicated in the authoritative style. It is also possible to explain the negative findings for authoritative communication with reference to processes of social learning based on the Self-determination Theory (Deci and Ryan, 2000; Ryan and Deci, 2000), which states that autonomy, self-determination and positive social relatedness of learners is required for effective learning. Impolite commanding communication threatens autonomy and generates a somewhat negative social relationship between communicators and recipients, so that the learning of norms, which shall be conveyed in communicative social learning processes, is impaired. Nevertheless, authoritative communication is still used in practice of anti-littering communication through posters, and in a study by Reiter and Samuel (1980) authoritative placards were similarly effective as polite communication. Therefore, a timely replication of the majority of previous findings showing a lower effectiveness of commanding anti-littering posters was considered an important goal for the present study.

Another communication style frequently used in Switzerland in practice of environmental communication against littering (or for promoting recycling) is humorous, witty communication. However, though humour is often used in practice, the effectiveness of using this style of communication to counteract littering is not well known. A study by Hansmann and Scholz (2003) demonstrated the effectiveness of a humorous communication strategy in counteracting littering. However, the study used a very special, two-step communication where ambiguity was generated in a first communication and subsequently resolved in a second step in a humorous way. Therefore, it remains yet to be seen whether a humorous one step

communication will also prove effective. Other studies referring to the Elaboration Likelihood Model (ELM) of communication by Petty and Caccioppo (1986) may even suggest that humorous communication is not so effective. Research on the ELM shows that attitude change through a central information processing path is more behaviourally effective than attitude change achieved via a peripheral route of persuasion (Stahlberg and Frey, 1993), and it was also found that people who are in good mood rather avoid cognitive efforts for information processing and, therefore, are more inclined to engage in peripheral processing (Bless *et al.*, 1992; Isen, 1987). If humour elevates peoples' mood, humorous communication may accordingly have the consequence of triggering peripheral, superficial processing of anti-littering information with negative implications for behavioural effectiveness. Therefore, analysing the effectiveness of a humorous, witty poster in comparison with other styles of communication seemed important.

Finally, investigating an environmentally oriented communication strategy seemed relevant, as environmental protection is the main focus of anti-littering communication. To some extent, any anti-littering communication, whether it is polite, commanding or witty and humorous, may be considered as oriented towards the environment. However, it seemed important to investigate an anti-littering poster, which is rather directly and purely oriented to the environment as compared with other posters.

In summary, the main goal of this study was to compare the effectiveness of posters using an authoritative, humorous and environmentally orientated communication style.

Materials and methods

A field experiment was conducted to investigate the effectiveness of three anti-littering posters using different styles of communication. The experimental design and procedure, and the experimental set-up and materials (i.e. posters and flyers), which were used, are described in the two following sections, and thereafter three main hypotheses are formulated.

Experimental design and procedure

The field experiment has a one-factorial design with three experimental conditions (different posters) and one control condition. The three posters A *Because waste has no wings*, B *Pollution prohibited* and C *Protecting the Environment* (Figure 1) were compared with each other with respect to their effectiveness to reduce littering and in addition their application was compared with a control condition without the presentation of any posters. For this purpose, flyers were distributed to persons who either passed by a certain anti-littering poster (A, B or C) or none (control condition). The number of littered flyers was then counted for all the experimental

Fig. 1

The three placards used in the study. English translation of the specific texts in large letters and main characteristics (in brackets) from left to right



trials in the different conditions. The number of distributed flyers per measurement period was also determined so that the respective percentage of littered flyers could be calculated and used as measure of littering in the different conditions.

The field experiment was carried out at four railway stations of the Swiss Federal Railway Companies (Schweizerische Bundesbahnen, SBB). Four railway stations, which are similar with respect to the number of trains and commuters per day and regarding shopping and dining options, were chosen. The selected stations were Zurich-Enge, Baden, Uster and Zurich-Altstetten. The experimental trials took place in passages within these stations. The participants of the field experiment were persons who were handed out flyers when passing by the respective sites at the stations during the experimental trials. The passers-by were asked by the flyer-distributors whether they would like to take a flyer or not. About half of the passers-by agreed and took a flyer. The experimental setting was designed inconspicuously in order to avoid that the passers-by at the experimental sites become aware of their participation in an experiment. However, the unobtrusive field experiment did not pose any ethical problems. There were no reasons to assume that participants could in any way be negatively affected by the experimental setup.

At all four locations, the experimental trials took place in the fall of 2014 on four weekdays from Tuesday to Friday. An experimental trial lasted 30 minutes during which flyers were handed out. Thereafter, a break of another 30 minutes was used to count and pick-up littered flyers and get ready for the next experimental trial. Each slogan (plus the control condition without posters) was studied at each of the four sites for one day, and 6 trials or measurements were conducted per day. On each day, the six flyer distribution periods were from 9h–9.30h, 10h–10.30h, 11h–11.30h, 13h–13.30h, 14h–14.30h, and 15h–15.30h. There were no experimental runs during the morning and afternoon rush hours to avoid a possible interference of crowding effects with the experimental procedure.

Only one type of poster (or none in the case of the control condition) was used at a certain location on a given day to avoid possible spill-over effects from previous presentations of a different poster on measurements for

a another subsequent poster and also to prevent attention which would have been generated by the process of changing the posters during the day. The order of the use of the posters on the first four days was drawn at random. The sequence of the posters on the following days and locations was then carried out on the basis of a balancing scheme. In total, 96 experimental trials were conducted (4 locations x 4 days per location x 6 measurements per day) in the overall field experiment. The proceeding balanced the experimental conditions with respect to the locations, the weekdays (Tuesday, Wednesday, Thursday, and Friday) and the number and time of day of the measurements. This means that each condition (3 types of posters and control) was equally often examined at each site and equally often on each of the four weekdays.

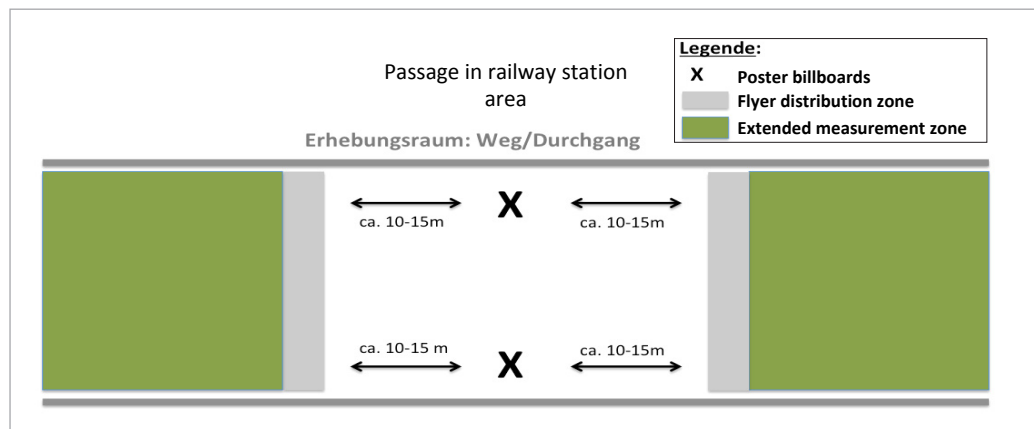
Experimental set-up and material

The flyers, which were distributed in the course of the study, were original flyers of the Swiss Railway Companies SBB without reference to the topics of littering, waste, recycling and environment. The distribution of the flyers and the subsequent measurements were carried out by two persons of the experimental team in inconspicuous, neutral everyday clothing. At each railway station the flyers were distributed by the same persons in all four conditions. Flyer distributors wore neutral everyday clothing (i.e. without institution logos or written messages).

The experimental set-up is depicted in Figure 2. In passages of the selected stations, two double-sided billboards were erected in parallel at the same height. The dimensions of the four (front and back of the two poster stands) identical posters, which were presented in accordance with the experimental plan (i.e. except for the control condition), were 118.9 cm (height) x 84.1 cm (width). Thus, four posters were presented in the runs of the experimental conditions, and two of them were visible for a passer-by when approaching the billboards from either direction of the passage. The distance between the two billboards was about 10–15 meters, depending on the width of the passage at the respective train station. The total area of the distribution zone was approximately 20 m² and the measurement zone approximately 200 m² (including

Fig. 2

Schematic plan of the experimental set-up at the four railway stations (Zurich-Enge, Baden, Uster, Zurich-Altstetten)



distribution zone). In about 10 to 15 meters distance from the posters in both directions of the passage, a person of the experimental team was posted to distribute flyers to passers-by.

Hypotheses and pre-study

Based on previous research on environmental communication against littering with slogans and posters, the following hypotheses on the behavioural effectiveness of three different posters against littering were formulated:

Hypotheses 1: All three investigated posters are effective to reduce littering. The proportion of littered flyers will, therefore, be significantly lower in each of the three experimental conditions than in the control condition without posters.

Hypothesis 2: Poster A (witty, creative) is more effective than Poster B (authoritarian, commanding). The presentation of Poster A will, thus, result in a smaller proportion of littered flyers compared with the presentation of Poster B.

Hypothesis 3: Poster C (environmentally oriented) is more effective than Poster B (authoritarian, commanding). The presentation of Poster C will, thus, result in a smaller proportion of littered flyers than the presentation of Poster B.

No hypothesis was formed with respect to differences between the effects of posters A and C.

A basic requirement for Hypotheses 2 and 3 was that posters A, B, and C actually possessed the intended, supposed characteristics. This was confirmed by a ma-

nipulation check in a pre-study, which took place approximately one year before the main study (Hansmann and Steimer, 2015). There, photos of the same three posters had to be evaluated in a questionnaire-based survey ($N = 147$) with respect to the communication dimensions creative, witty, authoritative, commanding and environmentally oriented on a five-point scale from 1 (= *not at all*) to 5 (= *very strongly*). The judgments of the participants in the pre-study confirmed that the posters possessed the supposed characteristics. As described in more detail by Hansmann and Steimer (2015):

- Poster A *Because waste has no wings* ($M_{creative} = 3.8$, $M_{witty} = 3.7$) was judged by the participants of the pre-study highly significantly ($p < .001$ in all four comparisons) funnier and more creative than Poster B ($M_{creative} = 2.1$, $M_{witty} = 1.6$) and Poster C ($M_{creative} = 2.9$, $M_{witty} = 2.2$).
- Poster B *Pollution prohibited* ($M_{authoritarian} = 4.1$, $M_{commanding} = 4.4$) was judged highly significantly ($p < .001$ in all four comparisons) more authoritarian and commanding than Poster A ($M_{authoritarian} = 2.0$, $M_{commanding} = 1.9$) and Poster C ($M_{authoritarian} = 2.2$, $M_{commanding} = 2.1$).
- Poster C *Protecting the environment* ($M_{environmentally\ oriented} = 4.4$) was considered highly significantly ($p < .001$ in both comparisons) more environmentally oriented than Poster A ($M_{environmentally\ oriented} = 3.7$) and Poster B ($M_{environmentally\ oriented} = 3.6$).

The three posters designed for this study accordingly possess the supposed characteristics and Hypotheses 2 and 3 could, thus, be formulated with reference to previous research and theories, as has been explained in the introduction.

Results and discussion

Distribution and littering of flyers

On average, 56.2 flyers were distributed within the 30-min distribution period of an experimental run, the numbers ranged from a minimum of 26 to a maximum of 99 flyers ($SD = 17.8$). The number of littered flyers ranged from 0 to a maximum of 8 flyers, and on average 2.4 ($SD = 1.7$) flyers were littered. The proportion of littered flyers (littered divided by distributed) represents the main dependent variable of interest for the statistical analyses comparing the different conditions. It fluctuated from 0 to 15.8% and the average ratio was 4.5% ($SD = 3.5$).

Two corresponding ANOVAs revealed no significant relationship between the weekday of an experimental run and both the number of distributed flyers and the percentage of littered flyers. There was also no significant relationship between the time of an experimental run and both the number of distributed flyers or the percentage of littered flyers.

Significant differences between the four survey locations were found regarding both the number of distributed flyers, $F(3, 92) = 26.01, p < .001$ (partial eta squared effect size: $\eta = .46$), and the percentage of littered flyers, $F(3, 92) = 3.32, p < .05, \eta = .10$. Most flyers were distributed in Baden ($M = 75.9$), followed by Zurich-Altstetten ($M = 53.7$), Zurich-Enge ($M = 51.8$) and Uster ($M = 43.3$).

With respect to the percentage of littered flyers, it was found that in Baden ($M = 2.7\%$) the percentage of littering was significantly lower (ANOVA contrast: deviation from the overall mean, $p < .01$) than the overall average of all locations. The other locations did not differ significantly from the overall mean of 4.5% (Zurich-Altstetten and Zurich-Enge, both 5.4%, Uster 4.6%).

Effects of the posters

No effect of the posters on the number of distributed flyers was expected. Nevertheless, a corresponding one-way ANOVA was conducted to analyse possible effects of the different conditions (4 levels: control condition and 3 posters) on the number of distributed flyers. The ANOVA revealed no significant effect of condition on the number of distributed flyers, $F(3, 92) = 0.31, p = .817, \eta = .01$.

A one-way ANOVA was conducted to analyse the effect of the different conditions (4 levels: control condition and 3 posters) on the proportion of littered flyers. A highly significant main effect of condition was found, $F(3, 92) = 11.84, p < .001, \eta = .28$. Accordingly, the experimental manipulation substantially influenced the proportion of littered flyers.

Additional post-hoc comparisons between the conditions were made to test Hypotheses 1 to 3 (Table 1). In the control condition without posters, on average 7.2% of the leaflets were littered. In the condition with the authoritarian poster, there was on average significant-

Condition (type of poster)	Experimen- tal runs N	Average number of distributed flyers M	Average percentage of littered flyers M (%)	Percentage val- ue difference to control condition ($\Delta\%$)	Reduction of littering (%)
1	2	3	4	5	6
Control condition	24	54,7	7,2 ^{abc}	---	---
Humorous poster	24	57,6	3,0 ^{ad}	4,2	58,3 ^{***}
Environmentally oriented	24	58,2	2,6 ^{be}	4,6	63,9 ^{***}
Authoritarian	24	54,1	5,4 ^{cde}	1,8	25,0 [*]
Total	96	56,2	4,5	---	---

Table 1

Average number of distributed flyers, percentage of littered flyers and reduction of littering in the different conditions as compared with the control condition

Equal superscripts denote significant differences between two conditions in the percentage of littered flyers according to LSD post-hoc comparisons ($df = 1$) within a one-way ANOVA described in the text; significance levels: a^{***}, b^{***}, c^{*}, d^{**}, e^{**} with $***p < .001, **p < .01, *p < .05$.

ly less littering (5.4%, post-hoc comparisons, $p < .05$) than in the control condition. In the two conditions with the environmentally oriented poster (2.6%) and the humorous poster (3.0%), there was also significantly less littering than in the control condition (for both post-hoc comparisons, $p < .001$). The percentage of littered flyers in the control condition was accordingly significantly higher than in each of the three experimental conditions with application of a poster. Hypothesis 1 was, therefore, confirmed.

Compared with the control condition without a poster, the environmentally oriented poster was able to reduce littering by 64%, the humorous poster achieved a reduction of 58% and the authoritarian poster achieved a reduction of littering by 25%. The percentages of littering in the conditions with the humorous poster ($p < .01$) and the environmentally oriented poster ($p < .01$) were, thus, significantly lower as compared with the experimental condition with the authoritarian poster (Table 1). Hypotheses 2 and 3 could, therefore, also be confirmed. There was no significant difference between the percentage of littered flyers in the conditions with the humorous poster and the environmentally oriented poster ($p = .625$).

In order to test the sensitivity of the effects of the experimental manipulation with respect to the different locations and the number of distributed flyers, an additional ANCOVA with the percentage of littered flyers as dependent variable was conducted. In this ANCOVA, the independent variables condition (4 levels) and location (4 levels: different railway stations) and the covariate variable number of distributed flyers were included in the analytical model. In line with the previous one-way ANOVA, a significant main effect of condition emerged, $F(3, 79) = 12.34$, $p < .001$, $\eta = .32$. There was, however, no significant main effect of location, $F(3, 79) = 1.90$, $p = .137$, and the interaction *location x condition*, $F(9, 79) = 1.12$, $p = .362$, and the covariate variable number of distributed flyers, $F(1, 79) = 2.75$, $p = .101$, were likewise not significant in this supplementary ANOVA.

Conclusions

This field experiment compared four communication conditions with respect to littering behaviour in a real

world setting at railway-stations. In the three conditions where a poster was presented, the percentage of littered flyers was significantly reduced as compared with a control condition without posters. This finding is in line with previous studies showing that posters and other prompts with brief anti-littering messages are an effective means for counteracting littering (e.g. Cialdini *et al.*, 1990; de Kort *et al.*, 2008; Durdan *et al.*, 1985; Geller *et al.*, 1976; Krauss *et al.*, 1978; Reich and Robertson 1979; Reno *et al.*, 1993). When the recipients of flyers passed by anti-littering posters with humorous or environmentally oriented content, littering was reduced by about 60%, and after passing by a poster with authoritarian communication a reduction of 25% was found. These effects were measured close to the point of flyer distribution. Therefore, spatially distant and longer-term effects were not measured. Unfortunately, the same was true for previous studies on effects of such prompts on littering behaviour. Therefore, future studies should also investigate long-term effects by applying a longitudinal design.

The present findings nevertheless indicate that communication is more effective if the message is oriented towards the environment or if it is humorous as compared with an authoritarian communication style. Further studies with different witty and environmentally oriented anti-littering slogans are required to confirm this finding as every humorous (environmentally oriented) message has some unique characteristics and, therefore, the findings for the exemplary humorous (environmentally oriented) poster investigated here cannot be straightforwardly generalised. There exists, however, already a quite large body of empirical evidence based on previous research for the reduced effectiveness of authoritarian communication against littering as compared with more polite communications styles.

This finding can also be explained quite well based on existing theories. Research on the Focus Theory of Normative Conduct has shown two processes that can lead to littering behaviour (Cialdini *et al.*, 1990; Reno *et al.*, 1993). Firstly, people may litter if they have not (yet) internalised the socially approved anti-littering norm. Secondly, people who have internalised the anti-littering norm and accept it personally may nevertheless litter waste occasionally, in situations where they do not focus cognitively on their anti-littering norm. Accord-

ingly, there are also two ways how anti-littering posters can inhibit littering.

The first possibility is that posters facilitate the internalisation of the anti-littering norms in persons who have not yet internalised them. Such effects are presumably rather long-term since they involve a change of personal norms. However, authoritative, commanding communication may not be very effective in this regard since it can elicit reactance preventing the adoption of communicated norms (Brehm, 1966, 1972) and because the implicit at least partly negative social relationship between senders and recipients of authoritative communications inhibits social learning (Deci and Ryan, 2000; Ryan and Deci, 2000) of the anti-littering norm to be conveyed.

The second possibility is that people who personally accept the non-littering norm but do not pay attention to their own standards in a given situation, because other things are cognitively more salient, are reminded of their own norm by a prompt. This second way of influence may be exerted by authoritative communication much in the same way as by creative or environmentally oriented communication. All three placards address the social anti-littering norm, hence, presumably all have the potential to remind people of it and to direct the cognitive focus of persons to the own personal anti-littering norm if they share it. In this case, the prompt makes the existing personal anti-littering norm more salient and directs the cognitive focus to it. Such an effect may be rather short-term as cognitive foci are changing continuously and the corresponding behaviour change process does not require changes in personal norms or the social learning of norms.

Accordingly, it seems plausible to presume that long-term effects of humorous and environmentally oriented posters are stronger than those of authoritarian posters. However, further research is needed to analyse how large such long-term effects are before conclusions on them can be made. Furthermore, the clear tendency of findings demonstrating rather low effectiveness of authoritative anti-littering communication in prompts does not exclude the possibility that certain types of authoritative communication may under certain circumstances in fact prove effective at least in the short term or in confined controllable areas. For example, in a study

by Reiter and Samuel (1980), a poster which threatened a fine of \$10 for littering was as effective as a poster asking politely for assistance in keeping clean the environment. Eventually, authoritarian posters in a commanding tone are more effective if they include threats of punishment for deviant behaviour, and the combination of such authoritative threats with measures for monitoring and controlling the overt behaviour of people (e.g. presence of police officers) may be even more effective in reducing littering. This was not tested in the present study. However, the primary goal of educational, sustainability oriented anti-littering communication should be to promote the internalisation of anti-littering norms, so that longer-term effects are achieved and people learn to show appropriate waste-disposal behaviours in settings where social control takes place as well as in settings where social control of behaviour is lacking (e.g. if people are hiking out in the nature). Reactance motivation elicited by authoritative communication may instead achieve conformity with the social norms in controlled settings but could eventually lead to negative reactant behaviours such as littering in socially uncontrolled areas. More research is needed to investigate such possible rebound effects. However, they cannot be excluded and, therefore, based on the present body of findings, polite, environmentally oriented and even humorous communication appears more recommendable for facilitating sustainability oriented learning processes in the population.

A further aspect, which speaks in favour of environmentally oriented, witty and creative anti-littering communication is that these characteristics are positively related to how much people like anti-littering posters (Hansmann *et al.*, 2013, 2015; Hansmann and Steimer, 2015). How much such posters are liked by the public is important since public acceptance is crucial for conducting continuous, sequential campaigns, which seem to be needed to counteract littering in the long term.

Acknowledgements

This research was supported by funding from the Swiss Federal Office for the Environment (FOEN). We thank the Swiss Federal Office for the Environment (FOEN) for funding and the Swiss Railways SBB for logistic support.

References

- Berger, T., Staub, A. and Heeb J. (Eds.) (2008) *Handbuch Littering - Eine Praxishilfe zur Entwicklung von Massnahmen gegen Littering*. Aarau; Switzerland: seecon GmbH.
- Brehm, J.W. (1972) *Responses to loss of freedom. A theory of psychological reactance*. Morristown NJ, USA: General Learning Press.
- Brehm, J.W. (1966) *A theory of psychological reactance*. New York, USA: Academic Press.
- Cialdini, R.B., Reno, R. R., and Kallgren, C. A. (1990) A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026. <http://dx.doi.org/10.1037/0022-3514.58.6.1015>
- de Kort, Y.A.W., McCalley, L. T., and Midden, C. J. H. (2008) Persuasive Trash Cans: Activation of Littering Norms by Design. *Environment and Behavior*, 40(6), 870-891. <http://dx.doi.org/10.1177/0013916507311035>
- Durdan, C.A., Reeder, G.D. and Hecht, P.R. (1985) Litter in a university cafeteria: Demographic data and the use of prompts as an intervention strategy. *Environment and Behavior*, 17, 387-404. <http://dx.doi.org/10.1177/0013916585173007>
- Fehr, G., Veit, M., Kamm, A. and Geisseler, L. (2014) Littering in der Schweiz – Studie zur Wirksamkeit von Massnahmen unter Berücksichtigung verhaltensökonomischer Erkenntnisse. Zurich, Switzerland: FehrAdvice & Partners.
- Flury-Kleubler, P. (2004) Wer Müll warum hinterlässt und wer nicht. In Rusterholz, P. und Moser, R. (Hrsg.). *Abfall. Reihe kulturhistorische Vorlesungen*. Bern, Switzerland: Lang.
- Geller, E.S., Witmer, J.F. and Orebough, A.L. (1976) Instructions as determinants of paper disposal behaviors. *Environment and Behavior*, 8, 417-439. <http://dx.doi.org/10.1177/136327527600800305>
- Hansmann, R. (2012) Erfolgreiche Kampagnen gegen Littering. *Umwelt Perspektiven* 3/2012, 11-13.
- Hansmann, R., Knoll, V. and Steimer, N. (2013) *Studie zum Einfluss der Charakteristika von Anti-Littering Slogans auf ihre Beurteilung durch Schüler*. Zurich, Switzerland: ETH Zürich Natural and Social Science Interface (NSSI) und IG saubere Umwelt (IGSU).
- Hansmann, R., Knoll, V. and Steimer, N. (2015) Welche Ansprache durch Plakate kommt bei Jugendlichen an? – Eine empirische Analyse zur Umweltkommunikation gegen Littering. *Umweltpsychologie*, 19(2), 124-144.
- Hansmann, R., Loukopoulos, P. and Scholz, R.W. (2009) Characteristics of effective battery recycling slogans: A Swiss field study. *Resources, Conservation and Recycling*, 53(4), 218-230. <http://dx.doi.org/10.1016/j.resconrec.2008.12.003>
- Hansmann, R. and Scholz, R. W. (2003) A two step strategy for reducing littering behavior in a cinema. *Environment and Behavior*, 35, 752-762. <http://dx.doi.org/10.1177/0013916503254755>
- Hansmann, R. and Steimer, N. (2015) Linking an Integrative Behavior Model to elements of environmental campaigns: An analysis of face-to-face communication and posters against littering. *Sustainability*, 7, 6937-6956. <http://dx.doi.org/10.3390/su7066937>
- Horsley, A.D. (1988) The unintended effects of a posted sign on littering attitudes and stated intentions. *Journal of Environmental Education*, 19(3), 10-14. <http://dx.doi.org/10.1080/00958964.1988.9942757>
- Krauss, R.M., Freedman, J. L. and Whitcup, M. (1978) Field and Laboratory Studies of Littering. *Journal of Experimental Social Psychology*, 14, 109-122. [http://dx.doi.org/10.1016/0022-1031\(78\)90064-1](http://dx.doi.org/10.1016/0022-1031(78)90064-1)
- Petty, R.E. and Caccioppo, J. T. (1986) *Communication and persuasion: Central and peripheral routes to attitude change*. New York, USA: Springer. <http://dx.doi.org/10.1007/978-1-4612-4964-1>
- Reno, R.R., Cialdini, R.B. and Kallgren, C.A. (1993) The trans-situational influence of social norms. *Journal of Personality and Social Psychology*, 64(1), 104-112. <http://dx.doi.org/10.1037/0022-3514.64.1.104>
- Reich, J.W. and Robertson, J.L. (1979) Reactance and norm appeal in anti-littering messages. *Journal of Applied Social Psychology*, 9(1), 91-101. <http://dx.doi.org/10.1111/j.1559-1816.1979.tb00796.x>
- Reiter, S.M. and Samuel, W. (1980) Littering as a function of prior litter and the presence or absence of prohibitive signs. *Journal of Applied Social Psychology*, 10(1), 45-55. <http://dx.doi.org/10.1111/j.1559-1816.1980.tb00692.x>
- Schultz, P.W., Bator, R.J., Brown Large, L., Bruni, C.M. and Tabanico, J.J. (2013) Littering in context: Personal and environmental predictors of littering behavior. *Environment and Behavior*, 45(1), 35-59. <http://dx.doi.org/10.1177/0013916511412179>
- Stahlberg, D. and Frey, D. (1993) Das Elaboration-Likelihood-Modell von Petty und Cacioppo. In Frey, D. and Irlle, M. (Eds.) *Theorien der Sozialpsychologie, Band 1: Kognitive Theorien*, pp. 327-360, Bern, Switzerland: Huber.

Humoristinio, aplinkosauginio ir įsakmaus pobūdžio plakatų prieš šiukšlinimą poveikio elgsenai tyrimas

Gauta:
2016 m. vasaris

Priimta spaudai:
2016 m. balandis

Ralph Hansmann, Nora Steimer

Šveicarijos federalinis technologijos institutas Ciuriche, Aplinkos sistemų mokslų katedra

Šiame straipsnyje pristatomas eksperimentinis tyrimas, kurio metu buvo nagrinėjamas humoristinio, aplinkosauginio ir įsakmaus pobūdžio plakatų prieš šiukšlinimą poveikis žmonių elgsenai. Plakatai, su užrašytais atitinkamais šūkiiais, agituojančiais nešiukšlinti buvo pakabinti keturiose geležinkelio stotyse. Eksperimentas apėmė keturių tipų komunikacijas, įskaitant ir kontrolinį atvejį, kur plakatas nebuvo pakabintas. Kiekvieno eksperimento (imtis $N = 96$) metu, 30-iai minučių buvo paskleistas žinomas skrajučių kiekis. Praėjus 30-iai minučių buvo suskaičiuojamas surinktų skrajučių kiekis atskiro eksperimento metu. Rezultatai parodė, kad naudojant humoristinius ir aplinkosauginius plakatus, atitinkamai 58% ir 64% skrajučių šiukšlių kiekis buvo mažesnis, nei kontrolinėmis sąlygomis. 25% mažesnis ir statistiškai reikšmingas skrajučių šiukšlių kiekis nei kontroliniame eksperimente buvo nustatytas naudojant įsakmaus pobūdžio plakatą. Atsižvelgiant į šio tyrimo rezultatus ir vertinant egzistuojančias teorijas, galime daryti išvadą, kad humoristiniai, bei aplinkosauginiai plakatai prieš šiukšlinimą yra efektyvesni, negu įsakmaus ir auklėjamojo pobūdžio plakatai.

Raktiniai žodžiai: *komunikacija, aplinkosauginė agitacija, autoritetingas, įsakmus, humoristinis, reaktyvus, šiuklės.*