

WHEN DO NORMS EMERGE BY HUMAN DESIGN AND WHEN BY THE UNINTENDED CONSEQUENCES OF HUMAN ACTION?

THE EXAMPLE OF THE NO-SMOKING NORM

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ABSTRACT

Although it is well known that social norms may emerge by human design or as an unintended outcome of uncoordinated human action, little work has been done addressing the conditions under which each of these processes occurs. This article suggests propositions focusing on this question, applies them in explaining the emergence of a no-smoking norm and tests some of them with a factorial survey. The data show that there is the expected strong negative effect of externality through smoking on the acceptance of a no-smoking norm and on sanctioning behavior. Involvement in social networks of non-smokers does not have any effect on sanctioning behavior and only a minor effect on the acceptance of a no-smoking norm. These results are not in line with the strong emphasis on the importance of social networks for the emergence of norms in the literature. Explanations of these findings are suggested.

KEY WORDS • evolution of norms • externalities norms • no-smoking norm • public goods

There are two basic processes that lead to the emergence of norms. First, norms may be created intentionally. Laws, contracts between businessmen, or statutes of voluntary associations are examples. Second, norms may be an unintended (and sometimes undesirable) outcome of uncoordinated individual human action, i.e. norms may emerge spontaneously. Examples are fairness rules, table manners, and many other customs of everyday life. Furthermore, there are combinations of both processes. For example, a norm may first emerge spontaneously and then become a law. Although

there is an extensive literature on each of these types of norm emergence, the conditions under which they obtain are rarely addressed. This article focuses on this question by analyzing the example of a no-smoking norm. In the first part, some general hypotheses about the emergence of planned and unplanned norms are suggested. These hypotheses are then applied to generate propositions about the emergence of a no-smoking norm. Predictions from these propositions are tested through a survey of 366 students at the University of Leipzig focusing on a no-smoking norm.

A *norm* is understood as a statement that something ought or ought not to be the case.¹ Explaining norms means explaining the extent to which individuals *accept* a norm. Further, since norms often hold under certain conditions, their *conditionality* should be explained as well. *Sanctioning* is treated here as a third explanandum and is not included in the definition of a norm.

Creation of Norms as Second-Order Public Goods

A basic idea underlying many explanations of norms is that norms are created intentionally if they are regarded as instrumental for the goals of a group.² Put more technically, norms are second-order public goods that promote the provision of other first-order public goods.³ For example, less pollution in a neighborhood through burning leaves (the first-order public good) may be achieved by creating a norm that leaves must be composted (the second-order public good). In this case, pollution is a negative externality,⁴ which is often regarded as a central condition for the emergence of norms.⁵

In order to explain the provision of a public good, the theory of collective action can be applied (Olson 1965; see also Hardin 1982, Sandler 1992): individuals will contribute to the provision of a public good and, thus, also to the establishment of a norm, if, among other things, their contribution matters. In a large group, the impact of a single individual is negligible and individuals will usually not act to bring about the public good unless there are selective incentives. These are benefits or costs that obtain only if individuals contribute or abstain. Positive selective incentives that promote norm emergence are often provided by social networks.⁶ This is plausible in particular if norms are established by joint action. Thus a prediction is that integration in social networks abets the emergence of norms.

Two questions arise when applying this theory to explain the emergence of norms. (1) What is a ‘contribution’ to the establishment (and maintenance) of a norm? Norm-generating collective action may consist of participating in groups that put pressure on the government to pass a law or stage campaigns that advertise the acceptance of a norm. Individual sanctioning may be a contribution if the individual intends by her or his sanctioning to contribute to the establishment (or maintenance) of a norm (i.e. to the provision of a second-order public good). (2) The theory of collective action explains when people *contribute* to create a norm but not when a norm is *accepted* or *internalized*.⁷ With regard to a public good such as a clean environment the provision of a public good is, *by definition*, a function of the number of people who do not pollute. In explaining norms, however, contributions such as sanctioning do not by definition lead to the norm’s acceptance. An empirical assumption must be made that acceptance of a norm is *empirically* a function of the extent of individual contributions. This assumption will be discussed later.

Norms as Unintended Consequences of Human Action

In this section, I focus on a particular mechanism that leads to the spontaneous emergence of norms.⁸ I choose the emergence of a no-smoking norm as an example. This is a *disjoint norm* (Coleman 1990: 247) in which the beneficiaries (non-smokers) and targets (smokers) are different, i.e. there are opposing interests. The mechanism applies in situations of the following type:

- (1) There are externalities in interaction situations.
- (2) Those affected by the externalities do not intend to create a general norm that reduces the externalities, but only wish to reduce the externality in the interaction situation.
- (3) Individuals are able to control the externality at low costs.

For example, being exposed to smokers is an externality for many non-smokers. If non-smokers sanction smokers, non-smokers usually do not wish to contribute to the emergence of a general no-smoking norm but simply do not want to be exposed to smoke. Non-smokers may control the externality by choosing the ‘exit’ option and changing places or by ‘voice’, such as asking

the smoker to refrain from smoking or expressing anger for the annoyance.

In this situation, a non-smoker P will have a *preference* that the smoker O will stop smoking. This is to be distinguished from a *regulatory interest* (see Heckathorn 1991: 35–6) or a demand for a norm that O *ought not to smoke* in the presence of P. P may not like O to smoke because P is allergic, but P may not think that O is obliged not to smoke in his presence. Similarly, P's punishment (such as reducing private contacts with O) may only convey the message that the punisher does not like the punished behavior; or punishment may be accompanied by *normative demands* that O *ought not to smoke* in P's presence.

When is there a regulatory interest and when are punishments combined with a normative message? I hypothesize: the stronger the externality, the more likely it elicits a regulatory interest.

A norm is likely to emerge if those who cause externalities are not just confronted with polite requests but with punishments *and* normative demands. Assume that smokers are frequently sanctioned when they smoke in the presence of non-smokers. The consequence will be that smokers will less frequently smoke in the presence of non-smokers. This does not yet mean that a no-smoking norm has emerged – there has only been a behavioral change. A norm exists only if smokers *accept* a statement that smokers (including O) should not smoke in the presence of non-smokers.

If sanctions are frequent, and if the costs of being sanctioned are relatively high, smokers will not just change their behavior, they will further acquire a negative attitude toward smoking. If punishment has a normative component it is also likely that a positive attitude toward a *norm* will develop. In other words, a no-smoking norm will be accepted or internalized.⁹ *The norm is thus a by-product of individual action that aims at achieving private goals.*¹⁰

Social networks are probably less important in situations where norms emerge spontaneously than in situations where norms are created by the members of a group. (1) In the former situation, there is often or mostly a dyadic anonymous interaction of a smoker and a non-smoker. Thus, the interdependencies in social networks that increase the sanctioning potential of the members are largely absent. (2) Sanctioning smokers is not a 'heroic' action. Therefore the sanctioning of smokers will rarely be a topic in conversations, and informal rewards for reported sanctioning behavior will be rare.

The literature on social norms treats social networks as an exogenous variable. In the smoking example, however, those for whom exposure to smokers is a high cost will not join or remain in networks that consist mainly of smokers. Non-smokers and smokers will thus be members of different networks.

When smokers are sanctioned fairly frequently, discrimination learning takes place:¹¹ smokers are punished in certain situations and not in others. When they enter situations in which a type of behavior has been punished in the past it is likely that the punished behavior will be enacted less frequently. When discrimination learning takes place, *cognitive* expectations will form as well: the smoker will store the situations in which smoking has been punished in memory and will expect punishment in similar situations. The sanctioning process thus engenders a *conditional* norm: smoking is allowed in certain situations and not in others. These conditions may be very complex and subtle. I surmise that planned norms are much cruder than norms that originate in a process of discrimination learning.

This argument yields the following prediction with regard to the conditionality of norms: it is likely that norms hold in situations in which the costs of performing a certain type of behavior are high. This proposition is discussed in more detail later.

When Are Norms Planned and When Do They Emerge Spontaneously?

The previous theoretical analysis yields three predictions with regard to the emergence of planned or unplanned norms:

- (1) A norm is *created intentionally* if the incentives to provide a public good are strong and the incentives for private action are weak.
- (2) A norm arises *spontaneously* if the incentives to provide a public good are weak and the incentives for private action are strong.
- (3) Both processes arise if both types of incentive are strong.

Workplaces where some employees smoke might be a situation where collective action is staged to create a no-smoking norm: non-smokers may form a coalition and put pressure on the smokers

or on the management to stop or regulate smoking. In this situation, individual sanctioning at low cost may not be possible, especially if the number of smokers in a room is large. On a larger scale, there have been and are anti-smoking movements in various countries (see e.g. Hilton 2000: Ch. 3). I do not know of any work analyzing the formation of those movements from the perspective of the theory of collective action. But, especially in countries in which there are strong concerns for health and against all kinds of drugs, one can easily imagine that there are plenty of selective incentives for political entrepreneurs, such as public attention or a career in various organizations, when they initiate collective action for anti-smoking laws.

The processes of the emergence of planned and unplanned norms are related. Assume that a norm has emerged by private action. Those who accept this norm – which henceforth will be called an *informal norm* – to a great extent will also demand that a law be enacted. Thus, a specific regulatory interest for interaction situations is extended to a demand for a general norm. I call this the *generalization proposition*.

Predictions to Be Tested

In this section, some predictions are made based on the previous theoretical argument and then tested empirically.

For a no-smoking norm to emerge or exist a condition is that smoking is regarded as an externality at least by non-smokers. This prediction should hold regardless of whether the norm emerges by human design or spontaneously. If, as already mentioned, a no-smoking norm is a disjoint norm it is to be expected that non-smokers regard smoking as a more severe externality than smokers. It is thus assumed:

Proposition 1. (a) Smoking is in general an externality for non-smokers, and (b) the externality is lower for smokers than for non-smokers.

The assumption of the standard theory of collective action that people will not act to create a norm in a large group implies that there will be no sanctioning behavior. The reason is that a second-

order free-rider problem exists for sanctioning behavior as well – see the references in note 3. If, however, a no-smoking norm is a by-product of private action the prediction is that sanctioning is significantly greater than zero. Furthermore, since a no-smoking norm is a disjoint norm, there should be significant differences in sanctioning behavior between non-smokers and smokers. Thus:

Proposition 2. (a) The sanctioning of smokers by non-smokers is significantly different from zero; (b) non-smokers sanction more frequently than smokers.

In contrast to proposition 2b, it is not implausible that smokers do not want to be exposed to other smokers either and, thus, also sanction people who smoke in their presence. However, it is more plausible that in general smokers are less frequently disturbed by other smokers than non-smokers.

How can the conditionality of a no-smoking norm be explained? If norms that emerge spontaneously are learned in a process of discrimination learning a behavior is punished (or rewarded) in certain types of situations and not in others. This holds for a no-smoking norm as well:

Proposition 3. A no-smoking norm holds in situations in which smoking is regarded as relatively costly. These are situations in which smoking is a strong externality or in which negative sanctions are expected if somebody smokes.

Let us apply this proposition to two situations. (1) Smoking will be regarded as prohibited in a *restaurant* if, among other things, the owner of the restaurant prohibits smoking. A person who smokes in this situation will expect to incur a cost when she or he smokes. Furthermore, a large number of smokers in the restaurant indicates that a person who enters the restaurant will not be faced with sanctions and generates a low marginal externality when she or he smokes. In this situation smoking will therefore be regarded as allowed. (2) The predictions are similar for a *student party*. If there is some indication that the hosts are against smoking, people will regard smoking as not allowed because they will expect negative reactions of the hosts and others; if a large number of people smoke at the party, this indicates that an additional smoker will only bring about low externalities and will not be faced with sanctions.

There might be alternative hypotheses that are inconsistent with the previous proposition. For example, people might think that a person should be allowed to smoke when she or he is highly addicted such that not smoking is rather painful. Thus, a no-smoking sign is irrelevant. We will test empirically what propositions are correct.

Would the predictions also hold when a no-smoking norm is introduced in a process of collective action? Such a norm would be fairly crude. A no-smoking law would hardly state that smoking is prohibited if it is likely from the perspective of a guest that a host does not like smoking. Instead, no-smoking laws specify the situations when smoking is prohibited in a clear way – an example is a smoking ban in public buildings. Thus, when a no-smoking norm holds in the situations described above, this indicates that a no-smoking norm emerged in a spontaneous process.

In the remainder of this section, a causal model is specified based on the previous theoretical argument (see Figure 1) – specifying conditions for the acceptance of a no-smoking norm and for the sanctioning of smokers.

It was noted that those for whom the externality through smoking is strong have an interest in the emergence of a no-smoking norm when they interact with smokers. There will thus be a positive effect of this externality on the acceptance of an informal no-smoking norm. Furthermore, involvement in social networks with friends who do not smoke reinforces the acceptance of an informal no-smoking norm. However, as already stated, the latter effect is fairly small.

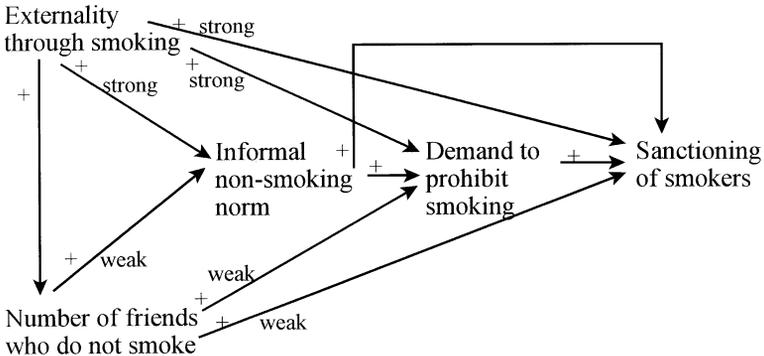


Figure 1. A causal model to explain the emergence of non-smoking norms

It was mentioned that individuals for whom an externality is strong will not join or remain in social networks that consist of those who produce the externality. Thus the prediction is that individuals who regard smoking as a strong externality will be members of networks with friends who are non-smokers.

An alternative proposition is that a non-smoker whose friends are mostly smokers will not break off the relationship but will develop a more positive attitude toward smoking. This might be a dissonance effect: the negative attitude toward smoking and membership in networks with many friends who are smokers leads to psychic tensions. One possibility for resolving these tensions is to value smoking more positively and smoke more. However, changing the attitude toward smoking requires an extensive restructuring of other attitudes and cognitive beliefs. These beliefs include views about the danger of active or passive smoking; changes of attitudes would include acquiring a positive evaluation of enjoying drugs and a change in valuing the importance of being in good health. Such a psychic restructuring will probably be more costly than reducing interactions or not entering interactions with smokers. Both propositions imply a positive correlation of the externality through smoking and the number of friends who do not smoke (see Figure 1). Since we use cross-sectional data, further research is needed to examine the direction of causality.

The general demand to prohibit smoking first depends on the extent to which an informal no-smoking norm is accepted (see the generalization proposition). When a strong externality and involvement in no-smoking networks affect the acceptance of an informal no-smoking norm, it is to be expected that these factors also have a positive influence on the general demand to prohibit smoking.

The proposition that a norm evolves spontaneously if, among other things, people are able to reduce an externality by private action suggests: if an externality is relatively costly the sanctioning of smokers is likely. In contrast, when a norm comes into being by collective action it is to be expected that the externality does not have an impact on sanctioning – see the theoretical argument above. Since the assumption here is that a no-smoking norm emerges spontaneously the externality through smoking is expected to have a positive effect on sanctioning behavior.

One reason why social networks were regarded as unimportant for the emergence of norms was that sanctioning smokers is hardly a heroic act, so sanctioning does not elicit social rewards.

The prediction is thus that social networks have only a minor effect on sanctioning behavior. Furthermore, when people accept an informal no-smoking norm to a great extent, or if they strongly demand the establishment of a formal no-smoking norm, they have incentives to sanction. It is thus predicted that the acceptance of an informal no-smoking norm as well as a general demand to prohibit smoking have a positive impact on sanctioning behavior.

Figure 1 implies that the major incentive for the emergence of a no-smoking norm is the externality through smoking. This factor has strong direct as well as indirect effects: it triggers an informal no-smoking norm, a demand for a formal no-smoking norm, and instigates sanctioning behavior.

An Empirical Test of the Propositions

In the summer semester of 1998 we presented 366 undergraduate students with a questionnaire to be filled out at the beginning of introductory classes about methods of empirical research ($N = 140$), philosophy of the social sciences ($N = 90$) and sociology of medicine ($N = 136$). The questionnaires, which took about 15 minutes to fill out, were collected after completion. The vast majority of the students in the classes participated in the survey. To what extent does this study confirm the previous propositions?

How Strong Is the Externality Through Smoking?

In order to ascertain the extent to which smoking is regarded as an externality (proposition 1) respondents were presented with three statements to which they could agree to different extents, from 'don't agree at all' (code 1) to 'fully agree' (code 4): (a) Passive smoking is a health hazard. (b) Compared to other health hazards, passive smoking is relatively harmless. (c) It simply disturbs me if somebody smokes when I am present. (d) Smoking is one of the real pleasures in life.

As Table 1 shows, 99% of the non-smokers regard passive smoking as a health hazard. Only about a fourth of the non-smokers (24.1%) indicate that passive smoking is harmless; three fourths of the non-smokers (73%) feel disturbed when they are exposed to smokers, and only 2.24% feel that smoking is one of the real

Table 1. Smoking as a negative externality

<i>Interview questions²</i>	<i>Percentage who agree or fully agree to items a to d (average agreement in parentheses, codes 1 to 4)¹</i>				
	<i>Non-smokers</i>	<i>Occasional smokers</i>	<i>Less than 1 packet daily</i>	<i>More than 1 packet daily</i>	<i>All respondents</i>
(a) Passive smoking is a health hazard	99.00% (3.81)	94.80% (3.61)	91.00% (3.40)	87.50% (3.25)	96.00% (3.66)
(b) Passive smoking is harmless	24.10% (1.88)	43.40% (2.32)	61.30% (2.69)	57.40% (2.79)	36.20% (2.15)
(c) Smoking bothers me	73.00% (3.09)	24.60% (1.91)	0.00% (1.17)	8.00% (1.24)	46.00% (2.38)
(d) Smoking is pleasure	2.24% (1.19)	28.80% (1.98)	46.90% (2.53)	56.00% (2.40)	19.30% (1.68)
<i>N³</i>	185	52	62	19	327

¹ Possible answers from 1 (fully disagree) to 4 (fully agree). Percentages refer to those who marked categories 3 and 4.

² The items read: (a) Passive smoking is a health hazard. (b) Compared to other health hazards passive smoking is relatively harmless. (c) It simply disturbs me if somebody smokes when I am present. (d) Smoking is one of the real pleasures in life.

³ *N* refers to the minimal number of respondents in the respective column.

The differences in the means between non-smokers and the three categories of smokers per item are significant at least on the 0.001 level.

pleasures in life. Smoking is thus a medium or strong externality to non-smokers.

The second part of hypothesis 1 is clearly confirmed as well: in general, the more a person smokes, the lower the externality. The differences between non-smokers and regular smokers are considerable. For example, 73% of non-smokers feel disturbed by smoking, but only 8% of heavy smokers.

Sanctioning Behavior

To measure sanctioning behavior, respondents were asked to indicate how frequently they had applied the sanctions shown in column 1 of Table 2. There can be no question that the sanctioning of smokers by non-smokers is significantly different from zero, as proposition 2a claims.¹² Table 2 shows that between 36.8% and 79.3% of the non-smokers applied one of the four sanctions. Sanction 3 is imposed most frequently. This sanction is clear and leaves smokers a choice how to react.

The data also confirm proposition 2b: sanctioning is more frequent among non-smokers than among smokers. It is interesting that not only non-smokers sanction, but smokers as well.

The Conditionality of the No-Smoking Norm and Its Measurement

The existence of an informal no-smoking norm was measured using a factorial survey. I will first describe the measurement procedure and then present the results.

Measuring the Informal No-Smoking Norm by a Factorial Survey

In a factorial survey,¹³ respondents are presented with descriptions of situations called *vignettes*. A vignette is a combination of the values of variables (i.e. of the vignette *dimensions*). Each vignette is rated by respondents. In measuring norms, the dimensions refer to the conditions under which a norm is assumed to hold. The respondent judges each vignette in regard to the extent to which the protagonist of a given vignette is allowed to, ought to, or ought not to perform a given behavior. An example for a vignette that will be discussed in more detail below reads:

Table 2. Sanctioning behavior: how smokers and non-smokers sanction smokers

<i>Kinds of sanctions</i>	<i>Percentage of those who sanctioned at least once (in parentheses: average frequency of sanctioning)¹</i>				
	<i>Non-smokers</i>	<i>Occasional smokers</i>	<i>Less than 1 packet daily</i>	<i>More than 1 packet daily</i>	<i>All respondents</i>
(1) I have ostentatiously cleared my throat and coughed	53.50% (1.92)	36.20% (1.60)	19.40% (1.25)	4.00% (1.04)	40.60% (1.67)
(2) I have talked to others about the disturbance so that the smoker could hear it	36.80% (1.59)	15.50% (1.21)	14.70% (1.18)	0.00% (1.00)	26.40% (1.41)
(3) I told smokers that they disturbed me	79.30% (2.43)	56.90% (1.97)	46.20% (1.78)	28.00% (1.48)	65.70% (2.16)
(4) I urged smokers to refrain from smoking	52.70% (1.91)	27.60% (1.50)	25.40% (1.45)	20.00% (1.36)	41.00% (1.72)
<i>N</i> ²	200	58	67	25	351

¹ Answer categories: never (1), once (2), several times (3).

² *N* refers to the minimal number of respondents in the respective column.

The means per item for non-smokers are significantly different from the value 1 (signifying no sanctioning) at least on the 0.0001 level.

Mr. Müller goes to a restaurant. This is a top class restaurant in which smoking is prohibited. There is nobody in the restaurant who smokes. Mr. Müller stays only for a short time to drink a beer. He smokes most of the time more than a package of cigarettes per day.

The values of the dimensions are underlined. For example, one dimension is the gender of the protagonist in the vignette with the values 'Mr. Müller' and 'Mrs. Meier'. For each vignette, the respondent is asked to indicate on a rating scale the extent to which the protagonist in the vignette (Mr. Müller in the example) is allowed to smoke.

In order to ascertain under what conditions a no-smoking norm holds, two everyday situations were selected: *visiting a restaurant* and *attending a student party* in a flat shared by several people. Both situations are familiar to the interviewed students, so questions about these situations can be answered reliably.

When specifying the relevant *dimensions* it was assumed, as stated above, that features of the situation important for a norm to hold are those which indicate possible externalities through smoking or other costs incurred when people smoke. In addition, other features of the situations mentioned were ascertained that could be relevant for the acceptance of a no-smoking norm. The dimensions, discussed below, are summarized in Table 3.

Gender was included as a dimension, because previously a woman who smoked, particularly in public, was scorned. In regard to the *restaurant*, it was assumed that the *class of the restaurant* might be important (dimension 2) – in a first-class restaurant, in contrast to a pub, smoking could be particularly disturbing to guests, so smoking might be disapproved of and sanctioned. If there is a *ban on smoking* (dimension 3) a smoker will reckon with sanctions. If the *number of smokers* (dimension 4) is large, a new smoker will not do much harm, and she or he will not expect sanctions. It is thus plausible that a no-smoking norm will not hold in situations in which many people smoke.

The needs of a person are often a condition for a norm to hold. If a smoker remains for a long time in a restaurant without smoking, the need for a cigarette increases. The *duration of stay* in a restaurant (dimension 5) and the extent to which a person is a *heavy smoker* (dimension 6) are indicators for the need to smoke.

Also examined was the extent to which similar dimensions were relevant at a *student party*. Besides gender (dimension 1), a more or less explicit ban on smoking (dimension 2), the number of

smokers present at the party (dimension 3), the duration of stay at the party (dimension 4), and the extent to which the protagonist in the vignettes smokes (dimension 5), were included in the vignettes (for details see Table 3).

Table 3 gives the *rating scale* that respondents applied to each vignette. In contrast to other norms, a no-smoking norm does not demand that one smokes in certain situations. The rating scale therefore ranges from 'It is not at all allowed to smoke' (-3) to 'it is in any case allowed to smoke' (+3). We suspected that zero would be chosen instead of a 'don't know' (i.e. a missing value), so in order to avoid such indeterminacies zero was not included in the scale. We assume that 'allow' is understood as 'not prohibited', in the sense that there is no norm that regulates smoking.

After specifying the dimensions and their values the vignettes can be constructed. Their number is equal to the Cartesian product. For the situation of the restaurant there are $2 \times 3 \times 3 \times 4 \times 2 \times 3 = 432$ possible vignettes.

Each respondent received 10 vignettes per situation, i.e. a *set* of vignettes. In total, 25 sets for each situation were constructed. For each set, the vignettes were chosen randomly from all vignettes. The selected vignettes were not put back.

Each respondent had to rate one set per situation. The two sets were combined randomly, which yielded 25 sets consisting of 10 vignettes of the first and 10 vignettes of the second situation. Each of these combined sets was included in the first part of a questionnaire. The second part consisted of questions that were the same for all respondents. The questionnaires were randomly assigned to the students.

The Conditionality of the No-Smoking Norm

The conditionality of the no-smoking norm (see proposition 3) can be tested by a regression analysis with the dimensions (Table 3) as independent variables and the judgments as the dependent variable. The standardized regression coefficients measure the effects of a dimension on the ratings. The units of analysis are the judgments of the respondents.¹⁴ Table 4 gives the dimensions of the vignettes for both situations in the first column. The dependent variable is recoded so that it refers to the extent to which an informal no-smoking norm is accepted.

Table 3. Dimensions of a factorial survey about the structure of a no-smoking norm in two situations

Rating scale: Respondents are asked to rate each vignette on the following scale:

It is *not at all* allowed to smoke It is *in any case* allowed to smoke

-3	-2	-1	+1	+2	+3
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It is *not* allowed to smoke

It is allowed to smoke

Situation 1: Restaurant

Each vignette begins with: Mr. Müller (or Mrs. Meier) goes to a restaurant.

Dimension 1: Gender of the actor in the vignette: (1) male, (2) female.

Dimension 2: Class of the restaurants: (1) top class restaurant; (2) ordinary restaurant; (3) pub.

Dimension 3: Smoking rule: (1) There is no indication whether smoking is allowed or prohibited. (2) There is a sign saying that it would be nice if people refrain from smoking. (3) There is a sign indicating that smoking is prohibited.

Dimension 4: Number of people in the restaurant who smoke: (1) No smoker; (2) one smoker; (3) several smokers; (4) most people smoke.

Dimension 5: Duration of stay in the restaurant: (1) . . . stays only for a short time to drink a beer; (2) . . . stays for some time to have a meal.

Dimension 6: Properties of the actor of the vignette: (1) . . . smokes most of the time more than a packet of cigarettes per day; (2) . . . smokes most of the time less than a packet of cigarettes per day; (3) ... is occasional smoker.

Situation 2: Student party in a flat shared by several people

Each vignette begins with: the student Sandra (or the student Steffen) is at a student party.

Dimension 1: Gender of the actor in the vignette: (1) male, (2) female.

Dimension 2: No smoking: (1) The hosts tell at the beginning of the party that smoking is allowed; (2) the hosts tell at the beginning of the party that they don't care about smoking; (3) the hosts do not say anything but it is known that they are nonsmokers; (4) the hosts do not say anything but it is known that they are smokers; (5) the hosts do not say anything; (6) the hosts ask to refrain from smoking.

Dimension 3: Number of smokers present: (1) Nobody smokes; (2) one person smokes; (3) several people smoke; (4) most people smoke.

Dimension 4: Duration of stay at the party: (1) . . . stays only for a short time to drink a beer; (2) . . . stays for a longer time to have a meal.

Dimension 5: Smoking of the actor in the vignette: (1) . . . smokes most of the time more than a packet daily; (2) . . . smokes mostly less than a packet daily; (3) . . . is occasional smoker.

Table 4. The effects of the vignette dimensions on the acceptance of a non-smoking norm (standard regression coefficients)

<i>Independent Variables (Vignette dimensions)</i>	<i>Dependent variable: acceptance of a non-smoking norm¹</i>					
	<i>Restaurant</i>			<i>Student party</i>		
	<i>All</i>	<i>Non-smokers</i>	<i>Smokers¹</i>	<i>All</i>	<i>Non-smokers</i>	<i>Smokers²</i>
1	2	3	4	5	6	7
Gender (female)	0.02	0.03	0.01	-0.02	-0.01	-0.02
Class of the restaurant	-0.04**	-0.06**	-0.01			
No smoking in restaurant	0.55**	0.54**	0.63**			
No smoking at student party ³ :						
Hosts request not to smoke				0.63**	0.59**	0.73**
Hosts tell they don't care about smoking				0.07**	0.09**	0.02
No statement by hosts, but it is known that they don't smoke				0.50**	0.53**	0.47**
No statement by hosts, but it is known that they are smokers				0.04*	0.02	0.04*
No statement				0.16**	0.20**	0.11**
Number of smokers	-0.21**	-0.18**	-0.27**	-0.22**	-0.24**	-0.22**
Duration of stay	-0.02	-0.01	-0.04	-0.05**	-0.02	-0.07**
Actor in the vignette is occasional smoker	0.03**	0.05**	0.04	0.04**	0.01	0.10**
Adjusted R^2	0.35**	0.33**	0.43**	0.48**	0.44**	0.62**

* Significant at the 0.05 level; **significant at the 0.01 level, one-tailed tests.

¹ The original rating scale (with high positive values indicating that smoking was allowed—see Table 3) was recoded so that high positive values indicate that smoking is *not* allowed, i.e. that a no-smoking norm is accepted.

For the restaurant, column 2 of Table 4 indicates that only two dimensions affect the acceptance of the no-smoking norm: if smoking is prohibited in the restaurant, a no-smoking norm is accepted ($\beta = 0.55$); if the number of smokers is relatively large, a no-smoking norm is not accepted i.e. smoking is regarded as allowed ($\beta = -0.21$). No other dimension has any effect on acceptance of the no-smoking norm. These results are in line with proposition 3.

For the student party, 'ban on smoking' is a categorical variable with six values (see Table 3). Five dummy variables were constructed with the category 'the hosts tell at the beginning of the party that smoking is allowed' as a reference category. The regression coefficient for a given category thus describes the effect of the respective category compared to the reference category. The category with the strongest effect is 'the hosts ask to refrain from smoking' ($\beta = 0.63$). That is to say, a no-smoking norm is strongly accepted when the hosts ask guests not to smoke, compared to the situation where the hosts explicitly allow smoking. When the hosts don't make any statement about smoking, but it is known that the hosts are non-smokers, a strong no-smoking norm holds as well ($\beta = 0.50$). Beta is lowest if the hosts don't make any statement at all about smoking and it is known that they smoke ($\beta = 0.04$). In general, a no-smoking norm thus holds when it seems that the hosts regard smoking as undesirable. When a relatively large number of guests smoke, smoking is also regarded as allowed ($\beta = -0.22$). These results were also found for the first situation.

Although no hypotheses were suggested for differential effects of the dimensions for smokers and non-smokers, we compare two extreme groups: non-smokers and those who smoke regularly. We find one substantial difference in both situations. If there is a ban on smoking in the restaurant situation, smokers regard smoking as prohibited to a greater extent than non-smokers ($\beta = 0.54$ for non-smokers and $\beta = 0.63$ for smokers). Smokers thus have a stricter no-smoking norm. The results are similar for the student party: if the hosts ask guests not to smoke this is comparable to a ban on smoking in the restaurant. In this case, smokers also accept a stricter no-smoking norm: the coefficients are 0.59 (non-smokers) and 0.73 (smokers).

Thus, in both situations a no-smoking norm holds in particular if smoking is prohibited or regarded as undesirable, and if there is a small number of smokers. If smoking is prohibited or considered undesirable, smokers accept a no-smoking norm to a greater extent

than non-smokers do. An explanation might be that an effective strategy to avoid sanctioning is to be particularly cautious and, thus, regard smoking already as undesirable if the likelihood of sanctioning is fairly low.

A Test of the Causal Model

To measure the *externality through smoking* I first used the items included in Table 1. Accordingly, this externality is high under the following conditions: (1) A person thinks that passive smoking is unhealthy; (2) a person does not think that health risks through passive smoking are harmless; (3) a person feels disturbed by being exposed to smokers; (4) a person does not feel that smoking is among the real pleasures in life. It is further assumed that the externality through smoking is high if (5) a respondent smokes little and, if she or he smokes, has started smoking only recently. This implies that the externality through smoking is low if a respondent is a heavy smoker and has already smoked for a long time. A factor analysis (unweighted least squares, varimax rotation) with these five indicators resulted in one factor with an explained variance of 48.9%; alpha of the scale is 0.78. Again, an additive scale was constructed after transforming all indicators to the same value range.

The *number of friends who do not smoke* was measured by the following question:

Think of the people who are particularly important to you. How many of them smoke?

Possible answer categories were: nobody, few, about half, many, almost all. For the following analysis the item was recoded so that high values indicate a large number of friends who do *not* smoke.

The acceptance of an *informal no-smoking norm* was measured using the two rating scales of the factorial survey. For each respondent, I first computed the average of her or his judgments for each situation separately; then the average of these two judgments was computed. This is the measure for the acceptance of an informal no-smoking norm.¹⁵ The scale was recoded so that high values signify that a respondent rejects smoking (i.e. accepts a no-smoking norm) to a great extent.

Table 5. Conditions for the acceptance of a non-smoking norm (bivariate correlations and standardized regression coefficients)

<i>Independent variables</i>	<i>Dependent variables</i>			
	<i>Informal non-smoking norm</i>		<i>Demand to prohibit smoking</i>	
	<i>r</i>	<i>Model 1</i>	<i>r</i>	<i>Model 2</i>
Externality through smoking	0.59**	0.51**	0.70**	0.49**
Number of friends who do not smoke	0.38**	0.14**	0.45**	0.10*
Informal non-smoking norm			0.57**	0.26**
Adjusted R^2		0.36**		0.54**

* Significant at the 0.05 level; **significant on the 0.01 level, one-tailed tests. N is at least 301.

Table 5, column 2, indicates that the bivariate correlations with the dependent variable are high and have the expected sign: a high externality through smoking and a large number of friends who do not smoke have a positive effect on the acceptance of an informal non-smoking norm. In the multivariate model in column 3, these effects are preserved. It is worth noting that the effect of the number of friends who do not smoke is relatively low, which is in line with the model.

The strong reduction in the coefficient of the number of non-smoking friends from 0.38 to 0.14 is due to the high bivariate correlation of 0.53 between the two independent variables. This correlation is in line with the hypothesis that individuals for whom exposure to smokers is a strong externality choose friends who are non-smokers.

The dependent variable *demand to prohibit smoking* was measured by adding the following two items and dividing them by 2: (a) Smoking in the presence of non-smokers should be prohibited; (b) it should be prohibited to smoke in public buildings. Possible answers ranged from 'fully disagree' (1) to 'fully agree' (4). A high value on the scale thus indicates that respondents subscribe to the demand to prohibit smoking.

The bivariate correlations of the independent variables with the demand to prohibit smoking (see column 4 of Table 5) are strong and in the expected direction. The multivariate analysis preserves the order of the strength of the correlations. Again, the externality through smoking clearly has the strongest effect. The effect of the number of friends who do not smoke is low. These findings clearly support the model.

The scale *sanctioning of smokers* was constructed by adding the values of the four sanctioning items (see Table 2) for each respondent and dividing them by four. Thus, a high value on the scale indicates that sanctioning behavior is performed quite frequently.¹⁶ Column 2 of Table 6 shows the correlations of the single indicators and of the composite externality scale with the sanctioning scale. The bivariate correlations are all positive and significant and, thus, in line with the model. The composite scale has the strongest effect. To be sure, those who are involved in networks with non-smoking friends sanction rather frequently ($r = 0.27$) but, as expected, this effect is relatively low.

To test the simultaneous effects of the independent variables on sanctioning I first regressed the sanctioning scale on the four single indicators for the externality of smoking, along with the other independent variables. Only two of the externality items have statistically significant effects, along with the demand to prohibit smoking. As noted above, we expected a small but statistically significant effect of the number of friends who do not smoke, but this variable has no effect at all. It is surprising that an informal no-smoking norm does not trigger sanctioning. When we eliminate all the insignificant variables we get model 2.

The overall results do not change when we include the composite externality scale (model 3) instead of the single indicators. Model 4 includes only the statistically significant variables: the externality through smoking and the demand to prohibit smoking are the major factors that evoke sanctioning. Externality is clearly the factor with the strongest effect.

Figure 2 summarizes the results of the model exhibited in Figure 1 using the composite externality scale. Two of the postulated relationships are not confirmed – see the dotted lines in Figure 2. The important results are that the externality through smoking has the strongest direct effects of all variables in the model. The effects of involvement in networks of friends who do not smoke are only small.

Table 6. Conditions for the sanctioning of smokers (bivariate correlations and standardized regression coefficients)

<i>Independent variables</i>	<i>Dependent variable: extent of sanctioning</i>				
	<i>r</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Externality through smoking					
Smoking is disturbing	0.48**	0.23**	0.31**		
Smoking is no pleasure in life	0.36**	0.04			
Passive smoking is not harmless	0.34**	0.11*	0.14**		
Passive smoking unhealthy	0.20**	0.02			
Low intensity of smoking	0.43**	0.11			
Composite scale	0.52**			0.38**	0.40**
Number of friends who do not smoke	0.27**	0.007		0.02	
Informal non-smoking norm	0.33**	0.009		0.03	
Demand to prohibit smoking	0.44**	0.13*	0.16**	0.15*	0.17**
Adjusted R^2		0.27**	0.26**	0.28**	0.28**

* Significant at the 0.05 level; **significant at the 0.01 Niveau, one-tailed tests.

N is at least 301.

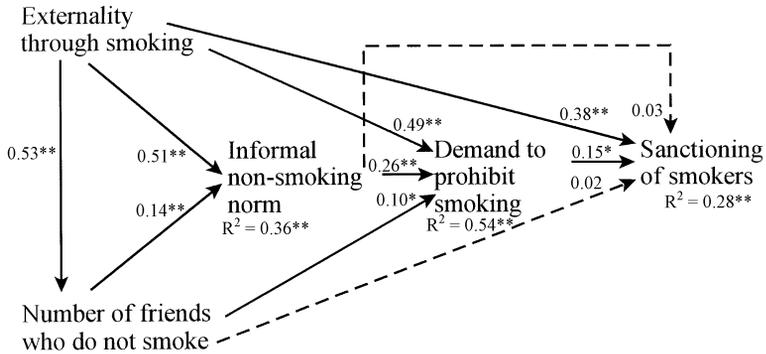


Figure 2. A test of the causal model (standardized regression coefficients)

Discussion

It may be argued that the causal model (Figure 1) lacks a major factor referring to general cultural values that are also relevant for the emergence of a no-smoking norm (see, for details, Kagan and Skolnick 1993). These may be values that prescribe consideration for others or, more specifically, not to impose externalities on others. Although this is plausible I doubt that the impact is strong. A major finding in attitude research is that attitudes can predict specific actions only if these attitudes are fairly specific – I am referring to the compatibility proposition (see e.g. Ajzen 1996: 311). For example, in order to predict whether people save energy, a positive attitude toward energy-saving is more suitable than when people value environmental protection. This finding suggests that values have only a low impact. Nonetheless, it would be worth while to include values, as an explanatory factor in future empirical studies, about the emergence of specific norms and about sanctioning behavior.

Our respondents were students and not a representative sample of the population. Nonetheless, these data are suitable for testing the previous propositions because the concern of this article is not the test of descriptive but of theoretical propositions that should be confirmed also by a probability sample of students.

The factorial survey is ideal for examining the conditions for the validity of a norm in specific situations. In regard to a no-smoking norm, it is not clear, however, whether the dimensions for the

validity of this norm hold in other situations as well. For example, when is it allowed to smoke at the workplace, at train stations or in hospitals? Further research is needed to explore the conditions in more detail. A discussion of the advantages and disadvantages of the factorial survey in comparison to other methods is needed as well.

So far there is little comparative theory or research about the conditions under which norms originate by human design and spontaneously. A complete explanation of a norm is given only if it is shown why a norm has emerged spontaneously and not by human design (or vice versa). Another major question that has to be addressed in this context is under which conditions social networks have what effects. Further theoretical enquiry is also necessary in regard to the various mechanisms that lead to the intentional creation of the spontaneous emergence of norms.

Although this article does not provide a theoretical model specifying in detail the process that leads to the evolution of a no-smoking norm, some ingredients of such a model could be based on the results of this study (see Figure 2). A trigger of this process could be some external event, such as media reports about health hazards of being exposed to smokers. The external event will change the values of the exogenous variable of the model i.e. the externality through smoking. This change would increase the homogeneity of social networks as well as the acceptance of an informal no-smoking norm. This, in turn, would lead to an increasing demand for a formal no-smoking rule and to increased sanctioning of smokers. Additional assumptions that are not yet in the model of Figure 2 refer to the effects of sanctioning on the acceptance of norms by those who were sanctioned and to incentives for politicians to enact formal rules on non-smoking. There may also be feedback effects that are not in the model: a law will probably strengthen informal rules. Other propositions are needed about the extent to which the initial situation matters for the evolution of a norm. For example, if the proportion of non-smokers is large the effects of the external event are probably different from a situation in which this proportion is small. A model of such a process could be based on historical data about the development of smoking regulations (Hilton 1993; Rabin and Sugarman 1993). A simulation would be useful too for modeling the aggregate effects of various distributions of values on the individual level.

NOTES

1. For a similar definition, see Homans (1974: 96). On the various meanings of 'norms' see e.g. Rommetveit (1954), Gibbs (1965), Williams (1968), and Crawford and Ostrom (1995). The concept of norm in this article includes formal as well as informal norms. A problem might be that propositions that explain norms may hold for one but not for the other type of norm. Whether this is the case can only be seen if the respective propositions are formulated and tested. Before this is done a wide definition seems theoretically fruitful because it allows the explanation of a wide class of phenomena.
2. Political science and public choice theory, in particular, the new institutional economics, and the sociology of law address this type of norm emergence.
3. See Coleman (1990: 270–3), Heckathorn (1989), Oliver (1980), and Yamagishi (1986).
4. An externality is given if the behavior of actors causes costs (negative externalities) or benefits (positive externalities) to other actors.
5. See, in particular, Demsetz (1967). See also Coleman (1990: Chs. 10 and 11), Eggertsson (1990), and Opp (1990).
6. See e.g. Coleman (1990: Ch. 11), Ellickson (1991), Opp (2001), and Taylor (1996).
7. 'Acceptance' and 'internalization' are regarded as a continuum ranging from simple approval of a norm (such as a traffic rule) to a strong commitment to a norm, when conformity or deviance elicit intrinsic internal rewards (a good conscience or pride) or punishments (a bad conscience, shame or guilt feelings).
8. This type of norm emergence is dealt with in the work of Friedrich A. Hayek. For a discussion, see Vanberg (1994). See also Axelrod (1986), Horne (2001), and Opp (1982, 1990). For a further discussion of various processes of the spontaneous emergence of norms, see Knight (1992) and Knight and Sened (1995).
9. This theoretical argument is consistent with the theory of attitude formation developed by Martin Fishbein and Icek Ajzen. For a summary, see Ajzen (1996).
10. There is a public goods aspect in the smoking example: a non-smoker who stops a smoker also provides benefits to non-smokers who stand next to him, i.e. he cannot exclude those 'free riders' from the benefits of being free of smoke. However, in many – perhaps in most – situations there is just a smoker and a non-smoker, and the smoker produces a private good for himself or herself.
11. See e.g. the stimulus proposition, as Homans (1974: 22–4) calls it. For a more detailed account of discrimination learning, see any textbook on the psychology of learning e.g. Schwartz and Reisberg (1991: Ch. 6).
12. For non-smokers, the mean of a given sanctioning item differs significantly (at the 0.0001 level) from value 1 (which is the code for not sanctioning).
13. This method has been developed by Peter Rossi (see Rossi 1979; Rossi and Anderson 1982). For application of the factorial survey for measuring norms, see Jasso and Opp (1997), Opp (2001), and Beck and Opp (2001).
14. The dependent variable has a value range from -3 to $+3$, without a zero point. It could be argued that this is not an interval scale because, due to the missing zero point, the difference between -1 and $+1$ is not equal to the differences between the other adjacent pairs of values. We examined whether different results obtain when the scale is recoded. I constructed a new scale with a value range from 0 to 5 where $-3/-2/-1/1/2/3$ are transformed to $0/1/2/3/4/5$. Regression

- analyses with these two scales showed differences only behind the second place after the comma. In the following analyses we use the original scale.
15. For the analyses presented in Tables 5 and 6, missing values were replaced by the means of the items if the number of missing values was not greater than 5%. This procedure is useful in making sure that differences in multivariate analyses are not due to different numbers of cases.
 16. A factor analysis (unweighted least squares, varimax rotation) with these items yielded one factor with an explained variance of 36.5%. The reliability (alpha) of the scale is 0.69.

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