



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



The path of least resistance: Regulatory resource depletion and the effectiveness of social influence techniques

Loes Janssen ^{a,*}, Bob M. Fennis ^{a,1}, Ad Th.H. Pruyn ^{a,2}, Kathleen D. Vohs ^{b,3}

^a University of Twente, Faculty of Behavioral Sciences, Department of Marketing Communication and Consumer Psychology, P.O. Box 217, 7500 AE Enschede, The Netherlands

^b University of Minnesota, Carlson School of Management, Institute for Research in Marketing, 321 Nineteenth Avenue South, Minneapolis, MN 55455-0438, USA

Received 1 March 2007; received in revised form 1 July 2007; accepted 1 September 2007

Abstract

Two experiments examine the role of regulatory resource depletion in the effectiveness of social influence techniques aimed at inducing consumer compliance. They test the two-step hypothesis that a) responding to the initial request stage of an influence technique requires self-control, thereby depleting one's limited resource of self-regulatory energy, and b) a state of regulatory resource depletion fosters the use of heuristics present in the persuasion context, which increases the odds of compliance with the target request of an influence technique. A first field experiment shows that yielding to initial requests (answering a series of questions) induces resource depletion. Experiment 2 demonstrates that a lower level of self-regulatory resources increases the extent of compliance with a request through the employment of the heuristic principle of authority. Together these results provide support for the prediction that regulatory resource depletion is important in explaining the effectiveness of social influence techniques.

© 2007 Elsevier Inc. All rights reserved.

Keywords: Regulatory resource depletion; Social influence; Foot-in-the-door; Persuasion; Consumer compliance

Why is saying “no” to fundraisers and sales representatives often so difficult when they ask for money, to sign a petition, or to buy a product? In many of these situations people are being targeted with a social influence technique, which is a clever persuasion attempt to increase the chance that consumers comply with a request. The present research provides support for the prediction that *self-regulatory resource depletion* is an important factor in explaining the effectiveness of social influence techniques.

1. Social influence techniques

A variety of persuasion strategies can be employed to get consumers to say “yes” to an offer they were not planning to yield to in advance. During the past four decades a variety of influence techniques have been studied, including the Foot-in-the-Door technique (Freedman and Fraser, 1966) and the Door-in-the-Face technique (Cialdini et al., 1975). Like many influence strategies, these techniques present people with one or multiple initial requests before the target request is presented. The Foot-in-the-Door technique first presents the consumer with a small request that is difficult to refuse, followed by a more substantial request. For example, imagine a fundraiser who approaches you in the street and asks you whether you are willing to answer a few questions about a charity. You answer these seemingly harmless questions and then he asks you to support the charity by donating money. According to several studies (see Burger, 1999), the

* Corresponding author. Tel./fax: +31 53 4892046/4259.

E-mail addresses: l.janssen@gw.utwente.nl (L. Janssen), b.m.fennis@gw.utwente.nl (B.M. Fennis), a.t.h.pruyn@gw.utwente.nl (A.T.H. Pruyn), vohsx005@umn.edu (K.D. Vohs).

¹ Tel./fax: +31 53 4894051/4259.

² Tel./fax: +31 53 4892769/4259.

³ Tel./fax: +1 612 625 8331/624 8804.

chance that you will donate money is now larger than if the fundraiser had asked for a donation right away.

The Door-in-the-Face technique starts with a large initial request that probably will be rejected, followed by a milder target request. Studies suggest that the chance that, for instance, a person buys a single lottery ticket to support the local sports club substantially increases when the person previously rejected the request to buy ten tickets (see O'Keefe and Hale, 2001).

2. Automaticity

To explain the effectiveness of social influence techniques, persuasion research increasingly emphasizes processes that are subtle, indirect and outside of conscious awareness of the consumer. In fact, the notion of automaticity has been forwarded as the cornerstone of all influence (Cialdini, 1993; Cialdini and Goldstein, 2004). Instead of mindful awareness of the situation, people appear to respond “mindlessly” (Langer, 1992) when confronted with a social influence technique. Under these conditions of reduced mental alertness, people are thought to fall back on habit and routine and hence employ “shortcuts” or simple heuristics to arrive at a decision. Use of these heuristics will generally increase the likelihood of compliance (Cialdini, 1993). As such, several studies on the Foot-in-the-Door technique show that employing the technique generally results in increased compliance, primarily because people want to behave consistently across situations (Burger, 1999). That is, compliance with the first, small request, such as answering a few questions about a charity, induces the self-perception that “one is the kind of person to comply with these kinds of requests”. This self-perception, functioning as a heuristic, increases the odds of compliance with the more substantial second request, like donating money to the charity in question. The Door-in-the-Face technique hinges on the heuristic principle of reciprocity: the ingrained motivation to return a favor (Gouldner, 1960). Generally assumed, the technique works because the influence agent makes a clear concession by downsizing the initial request, which evokes the need for the consumer to make a concession in return and therefore to comply with the milder request (Cialdini et al., 1975). When a request to buy ten lottery tickets is downsized to buying just one, the person will feel obliged to buy that single ticket.

Additional heuristic principles include the principles of scarcity (complying because the availability of an offer or a request is limited), liking (complying because one feels sympathy for the influence agent), and authority (complying with an influence agent because he/she is (affiliated with) a highly credible source; see Cialdini, 1993). This latter heuristic principle is featured in the present research.

3. Regulatory resource depletion

Given that the principle of automaticity and the reliance on heuristics seem to underlie the effectiveness of many social influence techniques, an appropriate question to ask is: where does this automaticity in these social influence situations stem from? Why do people behave “automatically”, and do people indeed fall back on ingrained heuristics when confronted with

an influence technique? Although automaticity appears to be a requirement for the techniques to work, no study to date has directly addressed this key question. The origin of this automaticity, and thus the effectiveness of many social influence techniques, possibly lies in a characteristic that most techniques have in common: they consist of multiple, sequential requests (Fern et al., 1986), and therefore the target consumer has to respond to one or more initial requests before the target request is presented. Actively responding to the initial request stage of a social influence technique and making decisions regarding one or more initial requests possibly requires self control and causes *regulatory resource depletion* (Baumeister et al., 1998; Muraven et al., 1998; Vohs and Heatherton, 2000). Hence regulatory resource depletion could be an important underlying factor that accounts for the automaticity, and thereby for the impact of many social influence techniques.

The core idea behind this resource depletion is that self-regulatory processes, such as controlled processing, active choice and overriding responses, draw on a limited resource, akin to strength or energy. Therefore, one act of volition will have a detrimental impact on subsequent volition, which draws from the same resource. Comparable to muscle failure after straining, the active self can become depleted up to the point of self-regulatory failure (Baumeister et al., 1998). As a consequence, the self is less able to function effectively which may result in reliance on habit, routine, and automatic processes (Baumeister et al., 2000; Vohs et al., 2005).

Several studies show that performing a preliminary act of self-control undermines self-regulation on a subsequent, unrelated task. In a study of Muraven et al. (1998) participants who suppressed thoughts about a “white bear” were subsequently more likely to give up on unsolvable anagrams than participants in control conditions. In experiments of Schmeichel et al. (2003) participants showed poorer performance on a cognitive test when they had previously regulated their attention or suppressed their emotions during a video. Additionally, Vohs et al. (submitted for publication) demonstrate that participants who make a series of choices and decisions (e.g., regarding consumer products) show poorer self-regulation afterwards as compared to people who view or rate similar options without making choices. An initial act of self-regulation also renders people less inclined to make active responses and more prone to favor a passive response option (Baumeister et al., 1998). Finally, research by Vohs et al. (2005, Study 7) demonstrates that depletion of regulatory resources impairs effective self-presentation in dyadic interactions and leads to falling back on habitual, overlearned patterns of self-disclosure.

In sum, research demonstrates that capacities for self-regulation are limited. A series of self-regulatory acts depletes one's resource of mental energy, thereby leaving the self with limited resources for self-regulation and reliant on habit, routine, and automatic processes (Baumeister et al., 2000; Vohs et al., 2005).

4. The present research

A limited-regulatory-resource perspective suggests that actively responding to the initial request stage of a sequential request

social influence technique, and making decisions regarding one or more initial requests, requires self control and induces resource depletion. A lower level of self-regulatory resources then possibly fosters the use of heuristics, when present in the persuasion context, which increases the odds of yielding to the target request of the influence technique. The present research tests this two-step hypothesis in two independent studies. In Experiment 1, a field study, people in the streets are presented with a series of questions similar to the initial request stage of what is called a “continuing question procedure”, which is an influence technique akin to the Foot-in-the-Door technique (see Burger, 1999). As hypothesized, answering this series of requests diminishes self-regulatory resources, as compared to a control condition in which participants are not confronted with any initial requests. In Experiment 2 regulatory resource depletion is induced with a self-control task adopted from Schmeichel et al. (2003). Participants are subsequently presented with a request to donate money to a charity organisation, which either is or is not described as a source of high authority, to activate this heuristic principle. According to the hypothesis, participants whose regulatory resources are diminished will be more susceptible to the authority heuristic than participants in the no-depletion condition, thereby showing more compliance when this heuristic is activated.

5. Experiment 1

5.1. Method

5.1.1. Overview and participants

In this field experiment people are being presented with a series of initial requests and their extent of resource depletion is measured. The study employs a single factor (initial requests: requests vs. no-requests) between-subjects design. Sixty people (30 men, 30 women) voluntarily participated in this study. Their age varied from 18 to 73 years ($M=34.33$, $SD=16.28$).

5.1.2. Manipulation

One of three confederates (one female, two male) randomly approached passers-by on a market square in the centre of a large town with a request to participate in a short study, being conducted by the health sciences department of the local university. The confederate asked participants whether they were willing to answer a few questions about their health behavior and lifestyle.

The confederate randomly assigned participants to the requests or no-requests condition. In the requests condition, the confederate presented participants with a series of initial requests, posed as 11 open-ended questions. These questions asked extensively about behaviors such as sports and exercising, smoking, use of alcohol, and eating habits. Examples of questions are “How much time do you monthly spend on sports and exercising?” and “Do you consciously pay attention to your eating habits?” Participants in the no-requests condition did not receive any initial requests.

5.1.3. Dependent measure

Next, participants completed the State Ego Depletion Scale (Ciarocco et al., unpublished) to measure resource depletion.

Participants in the requests-condition received a copy of this scale after answering the 11 open-ended questions, apparently as a part of the inquiries about their health behavior. Participants in the no-requests condition received the scale immediately after the introduction of the confederate. On a seven-point scale (1 = not true; 7 = very true) participants indicated their agreement with each of the 25 items of the State Ego Depletion Scale. Sample items include: “Right now, it would take a lot of effort for me to concentrate on something“, “I can’t absorb any more information“, and “I feel sharp and focused“ (reverse scored; see Ciarocco et al. (unpublished) for a complete listing of the items). The average score on this scale served as a measure of resource depletion ($\alpha=.90$). Finally, participants were debriefed, thanked, and dismissed.

5.2. Results and discussion

As predicted, a *t*-test reveals a significant effect of the requests condition on State Ego Depletion Scale scores ($t(58)=2.25$, $p<.05$, $d=.58$). Participants who have answered 11 open-ended questions about their health behavior and lifestyle score higher on the State Ego Depletion Scale, and thus are more depleted ($M=2.87$, $SD=1.00$) than participants in the no-requests condition ($M=2.39$, $SD=.60$).

This result of Experiment 1 provides initial support for the first part of the hypothesis, the prediction that yielding to initial requests negatively affects self-regulatory resources. Actively responding to multiple initial requests appears to be a cognitive activity that requires self-control and depletes the self’s resource of “mental energy”. The next study tests the second part of the hypothesis: the notion that people comply with a request to a larger extent when their regulatory resources are limited, provided that a heuristic is present in the persuasion context. As hypothesised, resource depleted participants show increased compliance with the target request, as compared to their non-depleted counterparts, but only when the heuristic principle of authority is salient in the influence context.

6. Experiment 2

6.1. Method

6.1.1. Overview and participants

In this second, laboratory study people’s regulatory resources are being diminished and their extent of compliance with a request is measured, under conditions in which the heuristic principle of authority either is or is not salient. The study employs a 2 (depletion-induction: depletion vs. no-depletion) X 2 (heuristic-activation: authority vs. no-authority) between-subjects factorial design. A total of 107 undergraduate students (37 male, 70 female) served as participants in this study, either in exchange for 6 euros or in exchange for 2 euros and course credit. Their mean age was 20.76 years ($SD=2.15$).

6.1.2. Manipulations

Upon arrival at the laboratory, the female experimenter randomly assigned participants to one of the four conditions.

She told participants that the experiment concerned nonverbal assessments of personality.

6.1.2.1. Depletion–induction. A state of resource depletion was induced with an attention control video adopted from Schmeichel et al. (2003). Participants were asked to watch a short videotape. This 4-minute videotape (without audio) featured a woman being interviewed by an off-camera interviewer. According to the instructions, participants would later be judging the women's personality based on her nonverbal behavior. In addition to the woman being interviewed, the tape showed a series of common one-syllable words (e.g., hat) at the bottom quarter of the screen for 10 s each. These words were not related to the woman being interviewed. Participants in the no-depletion control condition received no instructions regarding the irrelevant words, nor were they made aware of the words prior to viewing the video. Participants in the depletion-condition read the instructions "not to read or look at any words that may appear on the screen" and to redirect their gaze to the woman if they found themselves looking at the words. Previous research has shown that regulating attention this way is effortful and depletes regulatory resources (Schmeichel et al., 2003; also Vohs and Faber, 2007).

6.1.2.2. Heuristic-activation. After watching the videotape participants read a short message on their computer screen, asking them to consider donating (part of) their participant-money to a charity organisation. The heuristic principle of authority either was or was not activated by introducing either a well-known organisation, which was described as renowned and experienced, or a relatively unknown organisation, described as having starting experience in relief work. The domain of charity was the same in both conditions and concerned the development of educational projects in Third World countries. The charity organisation that was presented as an authority would presumably invoke more compliance, since research shows that people are more willing to comply with requests of authority figures, or – more generally – sources of high authority and credibility, either persons or institutions (see Cialdini, 1993).

6.1.3. Dependent measure

6.1.3.1. Compliance. After reading the description of the charity organisation, participants could indicate the amount of money they were willing to donate. Afterwards this amount was subtracted from the amount of money participants would receive for their participation in the experiment and they were paid the difference. The percentage of money that participants actually donated served as a measure of compliance. All participants were debriefed and thanked. The total amount of money donated during this experiment was transferred to the two charity organisations.

6.2. Results and discussion

An analysis of variance on the percentage of money donated, with depletion-induction (depletion vs. no-depletion) and

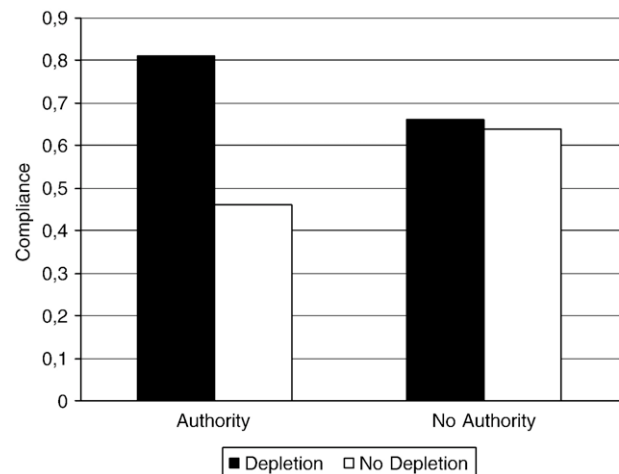


Fig. 1. Percentage of money donated to charity, as a function of depletion-induction and heuristic-activation.

heuristic-activation (authority vs. no-authority) as independent variables shows a main effect of depletion as well as an interaction-effect. Participants who are depleted of their regulatory resources by the attention control video are willing to donate a larger percentage of their money ($M=.73$, $SD=.38$) than participants in the no-depletion control condition, who did not have to control their attention during the video ($M=.57$, $SD=.43$; $F(1,103)=5.31$, $p<.05$, $d=.39$).

Of main interest for the hypothesis is the finding that the interaction between depletion-induction and heuristic-activation is significant ($F(1,103)=4.46$, $p<.05$). Analysis of the simple main effects shows that the effect of resource depletion on compliance is only significant when the authority principle is activated ($F(1,103)=8.69$, $p<.01$, $d=.94$). In these conditions, resource depleted participants donate a larger percentage of their money ($M=.81$, $SD=.32$) than non-depleted participants ($M=.46$, $SD=.42$). When the authority-principle is not activated, depletion does not affect compliance: the difference in percentage of money donated between participants in the depletion-condition ($M=.66$, $SD=.42$) and no-depletion condition ($M=.64$, $SD=.43$) is not significant ($F<1$, see Fig. 1).

These results provide support for the second part of the hypothesis, the notion that regulatory resource depletion increases the odds of compliance with a target request, through the use of heuristics. That is, people comply with a request to a larger extent when their self-regulatory resources are low, provided that a heuristic is present in the influence setting.

7. General discussion

The results of the present studies provide initial support for the prediction that resource depletion is an important factor in explaining the effectiveness of sequential request social influence techniques aimed at inducing consumer compliance. Experiment 1 shows that responding to a series of initial requests which involves answering a series of questions, affects the extent of resource depletion. Experiment 2 demonstrates that a lower level of regulatory resources increases the extent of

compliance with a request, provided that a heuristic is present in the persuasion context. Together these results support the prediction that regulatory resource depletion is a consequence of responding to initial requests and fosters the use of heuristics, which increases the odds of compliance with a target request.

Since the two proposed steps in this process (initial requests cause resource depletion and resource depletion causes compliance) have been studied independently, future research may profitably examine whether regulatory resource depletion is *the* or merely *a* mediator of the effect of initial requests on compliance with a target request. Other ways to strengthen the assumption that resource depletion underlies the effectiveness of these techniques would be to use more objective (less intrusive) measures of depletion (self-control tasks) instead of the State Ego Depletion Scale in Experiment 1, and use various manipulations of resource depletion, other heuristic principles, and different measures of compliance in addition to the ones used in Experiment 2.

The present research is the first to show that responding to initial requests induces resource depletion. The results of Experiment 2 are in line with previous research in showing that people employ heuristics in social influence situations (Cialdini, 1993; Cialdini and Goldstein, 2004), but the present research is the first to show that a state of regulatory resource depletion underlies this reliance on heuristic principles. As such the results of the present studies corroborate the often stated (but seldom tested) notion that mindlessness drives the effectiveness of compliance-gaining procedures.

In Experiment 2 the presence of the heuristic principle of authority was manipulated by introducing a renowned and experienced organisation that participants could donate money to, as compared to a relatively unknown organisation with starting experience in the no-authority control condition. Participants appear to be only susceptible to the authority heuristic when they are depleted of their regulatory resources, donating a larger percentage of their money compared to the no-depletion control condition. Though not significant, Fig. 1 shows a slight trend of *non*-depleted participants tending to donate more money to the no-authority organisation than to the authority organisation. Possibly the no-authority organisation invoked more sympathy with participants because the organisation was described as a newcomer, which is generally more in need of support. If so, then perhaps the absence of a clear authority may foster the employment of alternative bases for judgment, such as the liking principle. Future research could more directly address this possibility.

Finally, an interesting point to consider is how the results of the present research can be applied in practice. Sales representatives and fundraisers are probably more successful if they make use of initial requests to such an extent that consumers become deprived of their regulatory resources. In this state of mind the consumer will be likely to “follow the path of least resistance” and will be

more vulnerable for the heuristics that social influence techniques are built on. Important for consumers is to keep their wits about them; seeing through a persuasion attempt and responding in a mindful way will likely reduce or undo the effect of resource depletion. Perhaps consumers will then easier say “no” to unwanted persuasion attempts, and “yes” when they have ascertained that the offer will bring wanted benefits.

References

- Baumeister Roy F, Bratslavsky Ellen, Muraven Mark, Tice Dianne M. Ego depletion: is the active self a limited resource? *J Pers Soc Psychol* 1998;74:1252–65 (May).
- Baumeister Roy F, Muraven Mark, Tice Dianne M. Ego depletion: a resource model of volition, self-regulation, and controlled processing. *Social Cogn* 2000;18(2):130–50.
- Burger Jerry M. The foot-in-the-door compliance procedure. A multiple-process analysis and review. *Personal Soc Psychol Rev* 1999;3(4):303–25.
- Cialdini Robert B. *Influence: Science and practice*. (3rd ed.). New York, NY: Harper Collins; 1993.
- Cialdini Robert B, Goldstein Noah J. Social influence: compliance and conformity. *Annu Rev of Psychol* 2004;55:591–621 (February).
- Cialdini Robert B, Vincent Joyce E, Lewis Stephen K, Catalan José, Wheeler Diane, Darby Betty Lee. Reciprocal concessions procedure for inducing compliance: the door-in-the-face technique. *J Pers Soc Psychol* 1975;31(2):206–15.
- Ciarocco Natalie J., Twenge Jean M., Muraven Mark, Tice Dianne M. Measuring state self-control: Reliability, validity, and correlations with physical and psychological stress. Monmouth, NJ: Monmouth University; unpublished.
- Fern Edward F, Monroe Kent B, Avila Ramon A. Effectiveness of multiple request strategies: A synthesis of research results. *J Mark Res* 1986;23:144–52 (May).
- Freedman Jonathan L, Fraser Scott C. Compliance without pressure: the foot-in-the-door technique. *J Pers Soc Psychol* 1966;4:195–202 (August).
- Gouldner Alvin W. The norm of reciprocity: a preliminary statement. *Am Sociol Rev* 1960;25:161–78 (April).
- Langer Ellen J. Matters of mind: mindfulness/mindlessness in perspective. *Conscious Cogn* 1992;1:289–305 (December).
- Muraven Mark, Tice Dianne M, Baumeister Roy F. Self-control as a limited resource. Regulatory depletion patterns. *J Pers Soc Psychol* 1998;74:774–89 (March).
- O’Keefe Daniel J, Hale Scott L. An odds-ratio-based meta-analysis of research on the door-in-the-face influence strategy. *Communication Reports* 2001;14(1):31–8.
- Schmeichel Brandon J, Vohs Kathleen D, Baumeister Roy F. Intellectual performance and ego depletion: role of the self in logical reasoning and other information processing. *J Pers Soc Psychol* 2003;85:33–46 (July).
- Vohs Kathleen D, Faber Ronald J. Spent resources: self-regulatory resource availability affects impulse buying. *J Consum Res* 2007;33:537–47 (March).
- Vohs Kathleen D, Heatherton Todd F. Self-regulatory failure: a resource-depletion approach. *Psychol Sci* 2000;11:249–54 (May).
- Vohs Kathleen D, Baumeister Roy F, Ciarocco Natalie J. Self-regulation and self-presentation: Regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *J Pers Soc Psychol* 2005;8:632–57 (April).
- Vohs Kathleen D., Baumeister Roy F., Twenge Jean M., Nelson Noelle M., Rawn Catherine D., Schmeichel Brandon J., Tice Dianne. Making choices impairs subsequent self-control: A limited resource account of decision making, self-regulation, and active initiative. *J Pers Soc Psychol* (submitted for publication).